

## ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

## AN EVALUTION OF KARBALA CITY SLUMS AND CONCRETE BLOCKS IN IRAQ: A HOUSING UNIT DESIGN PROPOSAL

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**Abstract**

This research deals with one of the biggest housing problems in Iraq; where economic, social and political problems and the lack of organization have led to the emergence of slums in Iraqi cities and where the great social changes have been destroying Iraqi society. The appearance of concrete blocks in Iraqi cities during the war which divided and divided cities and neighborhoods into separate scattered pieces made the matter worse, as their numbers are estimated in the hundreds of thousands. The damage caused by concrete blocks is close to the damage of informal neighborhoods in cities. The research focuses both on the housing problems particularly in the slum areas of the city of Karbala with the changes of the planning policies of the city by the presence of slums and the existence of concrete blocks in Iraqi cities as an urban problem. Finally, the research proposes a housing unit design as a solution for the problem of slums by using concrete blocks.

**Keywords:** Karbala City, Iraq, slum, concrete blocks, housing unit**KARBELA ŞEHİRİ GECEKONDULARI VE IRAK'TAKİ BETON BLOKLAR ÜZERİNE BİR DEĞERLENDİRME: BİR KONUT BİRİMİ TASARIMI ÖNERİSİ****Özet**

Bu araştırma; ekonomik, sosyal ve politik sorunların ve örgütlenme eksikliğinin gecekondu oluşumlarına neden olduğu ve büyük sosyal değişimlerin topluma zarar verdiği Irak'taki en büyük konut sorunlarından birini ele almaktadır. Savaş sırasında Irak şehirlerinde ortaya çıkan ve

sayılarının yüzbinleri bulduğu tahmin edilen beton bloklar, şehirleri ve mahalleleri bölerek dağınık parçalara ayırmış ve kentlerdeki durumu daha da kötüleştirmiştir. Beton bloklardan kaynaklanan hasar, gecekonduların mahallelerin şehirlere verdiği zarara yakındır. Araştırma, hem Kerbela şehrinin gecekonduların bölgelerindeki konut sorunlarına ve gecekonduların ortaya çıkışı ile kentin planlama politikalarının nasıl değiştiğine hem de bir kentsel sorun olarak Irak kentlerindeki beton bloklara odaklanmaktadır. Sonuç bölümünde araştırma, gecekonduların sorununa çözüm olarak beton bloklar kullanılarak bir konut birimi tasarımı önermektedir.

**Anahtar Kelimeler:** Kerbela Şehri, Irak, gecekondular, beton bloklar, konut birimi

## 1. INTRODUCTION

The research has focused on the problem of slums, as it constitutes one of the most important obstacles facing urban planning and has appeared to keep pace with the rapid urbanization of cities and reconstruction, which dates back to its beginnings after the World War II. The concentration of government services in the main cities and the emergence of many modern industries contributed to the increase in internal migration of individuals and the exodus from the countryside to the cities in pursuit of job opportunities as well as the desire to urbanize. With this kind of endeavour, needy, poor has resorted to the outskirts of the city with an agricultural or desert nature, so they set up random gatherings in the form of human settlements that lack basic services necessary for human living. Where the situation in Iraqi cities is no different from the rest of the countries, it has become suffering from the phenomenon of slums that have spread very widely in the country, especially after 2003. This research studies the situation of slums in the city of Karbala in particular, and how slums began to appear in the city largely due to immigration from other cities in search of work or housing. The research focuses in particular on Al-Ghadir neighbourhood (one of the slums in the city of Karbala) because it is the largest and most expanding slum in the city. The phenomenon of the spread of concrete blocks in Iraq and what led to the distortion of the urban design of Iraqi cities significantly and isolating society from each other. The research consists of five main axes:

- i. The first axis clarifies the concept of slums linguistically and terminologically and their relationship with the corresponding terms to reach the final definition of slums.
- ii. The second axis studies the situation of slums in the city of Karbala in particular and how they began to spread in the city.
- iii. The third axis presents the phenomenon of concrete blocks and how they began to spread in Iraqi cities.
- iv. The fourth axis in which the research presents a proposal to design a housing unit by concrete blocks.
- v. The fifth axis presents the conclusions and recommendations reached by the research through the study of slums in the city and the design proposal put forward for a solution to this urban problem.

### 1.1 Problem Statement

The major Iraqi cities, including the city of Karbala, suffer from the phenomenon of slums that constitute an imbalance in the urban and urban fabric of those cities, due to the natural growth of the population and its high rates, and because of internal migration coming from the countryside to it. In addition to the external migration from other Iraqi cities (Mosul and Samarra), which have suffered from the war in recent years, as large numbers of residents of these cities have migrated to the city of Karbala. What exacerbated the problem was the presence of hundreds of thousands of concrete blocks which appeared after 2006 as one of the solutions proposed by the American forces to control the security situation in Iraqi cities and not only divided the city of Karbala, but also separated its people from each other, classifying them as distinct groups. They left negative social effects among the city's residents, which may be difficult to remove and it has deepened the separation in the city.



**Figure 1.** A house in Karbala City (photo credit: A. Kadhim)



**Figure 2.** Concrete blocks in Al-Mustansiriya University in the capital, Baghdad (<https://www.alsumaria.tv/news/168713/alsumaria-news-74093>)

## 1.2. Research Aim and Methodology

This research aims to:

- a. Examine the concept of slums in the third world cities and develop an insight to the reality of illegal settlements in Iraq.
- b. Develop a proposal for the problem of both concrete blocks in Iraq and slums in Karbala.
 

To achieve the objectives of the research, an “analytical” approach is adopted, which is sequenced in three stages:

  - i. Building a comprehensive “theoretical” framework for slums and their spatial behavior.
  - ii. Applying the indicators that were extracted from the theoretical framework to the study area which represents the slums located on the western side of the city of Karbala, namely Al-Ghadir neighborhood.
  - iii. Creating a housing unit design with using concrete blocks to solve the problems of the phenomenon of the spread of slums.

## 2. THE SETTLEMENTS OF TRANSGRESSORS: SLUMS

English dictionary describes the origin of the word “slum” from the word “settlement”, whose source is defined by the resource dictionary “settle: settle, establish a colony, and settlement” meaning a settlement, a colony or a small village, and “settler” refers to the colonized (Al-Baalbaki, 2004). The Webster dictionary deals with the word settlement “a smaller than a town where a group of people has come to live and make their home, where few or no people lived before” (Webster, 1975). As for the word “tajawiz” in the Arabic language, it refers to the source of the verb “jawiz” permissible. Exaggeration on the part of the addition, that is, transgression and cut off. As it was mentioned in Mujam al-Munajjid, where it refers to the source “Jazz (Jazz Juza)” the place: He left it, permitted it and justified it, and the place was permissible; he went beyond it (Al-Maalouf, 1981). Among the vocabulary synonymous with the word “tajawiz” in the Arabic language is the singular “taada” and the singular “Istahl”, where the meaning of “taada” comes as transcending something to another in the sense of transgression (Al-Maalouf, 1981). As for the word istahl, it is something that was permissible, or the land was permissible, meaning: He inhabited it without any right (Gibran, 1981). The concept of transgression came in the English source “squat: ter - tted - tting” where the dictionary defines the source resource “squat” as “whoever occupies land without right or without a wage he pays, or whoever occupies land (attending to acquire it by laying hands)” (Al-Baalbaki, 2004). The Webster dictionary deals with the word squatter “one that settles on a property without right or title or payment”. It also defined it as “one that settles on public land under government regulation with that purpose of acquiring the title” (Webster, 1975). Abrams (1971) explains in his book *The Language of Cities* some vocabulary derived from the source “squat” (Abrams, 1971). Several terms were released for slums, which are concerned with its conceptual field. Including slums illegal violators of the law, and slums, which are called slums, which are known for their ownership openly, either to the state or to other owners, and usually outside the scope of government services (Hamza, 1980). While it is understandable for backward areas as one of the types close to informal housing, as most of its residents are workers earners, small employees, farmers and immigrants (Khattab, 1993). There are several types with different classifications according to the educational or scientific status or others. The concept of residential slums is broad and unstable, and

often symbolizes the lack of minimum basic services in residential communities in contemporary life. Slums have several definitions, including the definition of the Arab institute for urban development “as areas whose homes were built without a permit on land owned by the state or owned by others”, and housing is often built outside the scope of government services. It has several features, including overcrowding, deteriorating buildings, and lack of services and infrastructure. Slums are the opposite of organized housing (Al-Naeem, 2004). The first is characterized by an irregular structure that is more widely spread. It is scattered within small areas that lack the most basic elements provided by the urban design of the city. As well as large numbers of families live in slums, as the housing unit that is supposed to be inhabited by one family has become more than one family in small spaces. And in several axes, the lack of job opportunities, learning, services, etc., this comes as a reason for isolation from urban gatherings with social dimensions that may conflict with the customs and traditions of urban dwellers as well as environmental, economic and other axes (Abdel Aal, 1999). It may encourage, to some extent, the creation of an environment for crime, and this was confirmed by a study carried out by Pia Abdullah Al-Ali, Chairman of the Board of Trustees of the Arab Institute for Urban Development. The absence of law in the slums led to the spread of theft and crime, which negatively affected the neighboring neighborhoods, as it became the center from which criminals start (Karrer, 1998).

The concept of slums differs from one region to another. Slums are known by several definitions, including poor and crowded areas, and are described as distorting the planning system from an architectural point of view regardless of whether they adhere to the laws of the state or not. It is also called by several names such as hidden housing, deteriorating housing, violating housing and residential violations, poor neighborhoods, chaotic housing, shantytowns, temporary housing, slums, and sewers (Safita, 2004). The United Nations ESCWA (2016) defines slums as areas where groups of housing units have been established on land that the occupants do not have the right to legal claim or illegally occupy; or unplanned slums and areas where housing does not comply with current planning and building regulations (unauthorized housing). It was known as the neighborhoods that were built in the absence or weakness of law and legislation, and with substandard standards. And many of them were built in municipal lands where there are narrow roads and alleys for the passage of individuals only so that it is impossible to provide social services due to the absence of suitable spaces to build a school, playground or dispensary (Faour, 2004). Slum areas are neighborhoods that are mostly inhabited by the poor, but they do not form a harmonious social fabric, because they started from the masses of oppressed immigrants, and according to the modern urban systems in our contemporary world, the areas subject to the laws of regulation considered official and organized areas. With regulatory provisions, whether urban or rural, it is considered random or informal (Abu Al-Hayja, 2001).

## **2. Urban and Environmental Characteristics of Slums**

Al-Dulaimi(2002) ) described the characteristics of slums as:

- i. The poor level of housing which is not subject to any kind of control; and some of them lack basic services, such as water, sewage, electricity, and green or open spaces that lead the streets as the only public spaces for the population.
- ii. The streets are narrow and meander sometimes as a result of the random division, which leads to the difficulty of transportation internal and to the traffic flow due to different street levels at times.

- iii. The overlap of economic activities and markets with residential areas as most of them depend on the street as a means of displaying and selling their products.
- iv. Most of the housing units in slums are built from the raw materials available in the city, such as clay, tin, and the waste of iron factories.

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### **2.2. The Emergence of Slums**

The reasons for the emergence of slums vary with different dimensions, which are mostly the lack of housing units in cities within the urban design in line with population growth and immigration. Where slums appeared in different periods according to the circumstances the country is going through, the most important of which are internal migrations from the countryside and external migration from Iraqi cities that suffer from war which is considered one of the reasons that have been diagnosed in urban areas that suffer from this phenomenon, which is due to:

- a. Inefficiency in the application of legal articles related to urban planning, which are concerned with addressing the problem.
- b. Increases in population growth rates as a result of internal and external migration (Al-Wardi, 1965).
- c. Problems related to the state's procedures towards investments or financing for the housing sector, as well as failure to follow up on the implementation of laws related to the protection of state-owned land (Shawky, 1966).
- d. The lack of a real tendency for those interested in the housing sector to provide low-cost housing complexes for people with disabilities limited income (Al-Baldawi, 2008).
- e. Failure to develop urban design for cities commensurate with the population growth of the city.
- f. Sudden and forced migrations built by areas that create wars, disasters, or misfortunes security situation.
- g. Obstacles created by businesses in the banking sectors to lend, such as the Housing Bank or real estate Bank.

- h. Poor living conditions associated with a low level of income and a poor level of services in the countryside compared to the cities (ibid).

The research studied the situation in slums in terms of social, economic and cultural terms, where the research reached:

- i. Social dimensions: Social dimensions of the population, where slums are distinguished as the place to which rural residents and immigrants from other cities go. Through the analytical study of social characteristics, it is noted that these areas do not only shelter the unemployed and the marginalized, but they also shelter the labor force that does not have jobs, along with social groups that are relatively heterogeneous, and this results in new disparities in the areas of slums. What is observed today in the cities of Iraq that received housing seekers from the same governorate or from other governorates is that most of them live in slums. For reasons related to the security situation, cities have been built with a large exodus from their original areas to other areas, adding a new feature to the self-homogeneity of social groups (Al-Mahdi, 1997).
- ii. Economic dimensions: Represented mainly by the income side where the majority of the population of these areas is poor and has low incomes compared to other areas. This poverty may be due not only to the factors of unemployment, irregular work and weak economic resources, but also to the size of the family and the high number of unproductive individuals within the same family due to their young age or old age (Al-Ajili, 2007).
- iii. Cultural dimensions: The low level of education is generally observed in slums. The majority do not read or write, and this is due to dropping out of school at a young age in order to work. In addition, a few have university degrees because they are able to afford university costs. (ibid).

### 3. KARBALA CITY

Karbala, the city of golden domes, is one of the most important ancient Iraqi cities whose roots go back to the era of the Babylonian civilization (3rd millennium BC). It is a destination for millions of Shiite Muslims visitors in the Islamic world throughout the year due to the presence of the shrines of Imam Hussein and Abbas bin Ali on its land. The city of Karbala is located about 105 kilometers southwest of Baghdad, on an area of 52,856 square kilometers, and is characterized by soft land purified of gravel. It is about thirty kilometers west of the Euphrates River, and is located on the edge of the Badia in the middle of the sedimentary region of Iraq, and on the transportation line linking Iraq with the Arabian Peninsula. Karbala's climate is hot in summer and relatively cold in winter. Palm groves and fruit trees on three sides surround it. It is watered by the Husseiniya River branching from the Euphrates River. On its northwest is the city of Ramadi, in its east is the city of Hilla and the ruins of Babylon, and in its west is the western desert, which includes Lake Al-Razzaza. The city of Ain al-Tamr (Shathatha) and the famous fortress of al-Ukhaydir, and to the south of it is the city of Najaf al-Ashraf (Al Tohme.2018).

#### 3.1. Slums in Karbala City

Slums are described schematically as settlements, where they may possess some communal components and architectural functional characteristics of residential neighborhoods, with a difference in the

organization of basic services that are available in the slums. As slums spread around many governorates of Iraq, including Karbala, this can be seen clearly in the vicinity of cities and green spaces around residential neighborhoods. The slums contain crowded dwellings that reach the point of overcrowding due to the lack of planning. There is no doubt that it lacks services and means of livelihood, as it is in the regular official neighborhoods, as it is considered illegal. In turn, it is difficult for the local government to supervise administratively or provide municipal or regulatory services to it (Krista E, 2013). Thus, it will be affected by the negative factors affecting the environment, economic, social, security and other slums, and it may be difficult at the present time to take a decision to remove them for several reasons, including the resort of its residents to deal violently with the implementation of orders. On the other hand, the situation is exacerbated by the rapid increase in unplanned construction, as the primary statistics diagnosed by specialists indicate that there are more than 4,000 families living in informal neighborhoods inside and outside the updated urban design of the city in Karbala Municipality, 2011. This number indicates also to the security crises that lead to displacement. 75,000 housing units is the total housing deficit that caused the housing crisis, which according to the local government in Karbala This in turn amounts to 23,000 housing units that must be created over the next five years (the reasons for the rise in land prices in particular and real estate in general (Al-Ajili, 2007



**Figure 3.** Karbala City slums' aerial view (Google earth map, 2021)

The emergence of slums contributed to change the map of the city of Karbala and generated pressure on services and the environment, which are among the basic necessities of human livelihood. According to the researcher Al-Saadoun (2011), the lack of access to clean water for the residents of slums for human and domestic uses forces them to buy water from tank vehicles, which is one of the reasons for decreasing sources of water in the city of Karbala.

The housing units in slums are characterized by different patterns that depend on a number of factors. In the study area, randomness, irregularity and homogeneity are observed in the scattered housing units. The majority of the housing units are of the block type. A small percentage of the houses built with mud are scattered. One tin house can be distinguished on the edges. Most houses contain one



room and a small kitchen. As for the others, they contain two rooms, a kitchen, and bathrooms. The general attraction of the residents in those neighborhoods is that the cost of the housing unit is very low compared to the organized residential neighborhoods. In addition, the rent is very low and can be provided by people with limited income. A large part of housing units does not possess the real estate status in the official state institutions represented in the real estate departments, which exacerbates the problem and works to confuse the routine work of transferring ownership in a difficult situation from the residents by titling these lands in the future as they belong to the state real estate registration departments. In addition, it was found that some of the properties belong to owners who are not residing in Iraq at the present time.



**Figure 4.** A housing in Karbala City (photo credit: A. Kadhim)



**Figure 5.** A house in Karbala City (photo credit: A. Kadhim)

This neighborhood suffers from a deterioration in social services (health and general) in terms of the apparent lack of services and the exacerbation of health problems, especially children, due to the deterioration of the environmental situation in the area. The residents of these areas are displaced people coming from other governorates due to war conditions and searching for work.

### **3.2. Karbala Slums: A City within a City**

The slums in the city of Karbala (Al-Ghadir neighborhood) take an urban form different from the city in general. The closest description to this situation is “a city within a city”, which is defined as “a city surrounded by another city or territory which is in a form of an enclave” (Donald Eric van Ruiten, 2014: 13). With its social, political and economic situation, Al-Ghadir neighborhood represents a small city within the city of Karbala.

Most of the residents of slums in general in the city of Karbala, in terms of their social standing, belong to the clans. The research indicates that people live in the form of clan gatherings within the slums, which was not present in a civilian city like Karbala in the past. And the difficult conditions in which they live inside these slums forced them to gather as tribal and clan groups for the sake of assistance and protection. Most of the slum dwellers have dropped out of school, which made it difficult to integrate into society from the reality of social or cultural life. All these reasons made the slum community largely isolated from the community of the city of Karbala, a community which doesn't belong to the city. From an economic point of view in slums, most of the residents are from the poor class whose monthly income does not reach the level that provides basic needs. This is what made the economic situation for them separate from the city, as the markets mostly sell used things only and the spread of random markets widely on the sidewalks and in the streets. Unemployment spread widely in the community, as most of the residents work in simple handicrafts for very low wages, even those who owned a job in the past had lost it because they left their previous cities. All this led to the spread of unemployment, crime and illegal businesses in the slums. There is also a clear absence of the rule of law in slums, as the law that applies in Karbala does not include or apply in slums. This helped the emergence of law and customs of the tribe in controlling slums. From a political point of view in slums, the residents of these slums are usually exploited by politicians with false promises by appropriating the lands in which they live or by giving them legal status to reside there for political gain, which has helped to increase the spread of these slums. In addition to the emergence of political figures from these neighborhoods, which have been largely prevented from changing the reality of these slums, they have a political representative in the central government. Consequently, there is a small government in these neighborhoods that manages the political situation for them and exploits them for political gains, and this is one of the most important reasons that separate these slums from the city in general. All these circumstances helped to form a city within the city of Karbala, a separate city in terms of social, political and economic status. The residents of this small city (slums) live as if they are surrounded by another city that refuses to accept their presence.

### **4. CONCRETE BLOCK IN IRAQ: FROM WAR TO RE-USE**

The process of encircling the official institutions with concrete blocks began in 2004 by the American forces, whose forces and some of their columns were stationed near those departments. The aim was

to protect American soldiers from being targeted by car bombs. At that time, the Americans set specific specifications for some concrete blocks, and production companies were required to adhere to them to reduce losses during the bombings. The barrier industry suddenly rebounded, and more than a hundred factories appeared in Baghdad and the central and southern cities, especially between 2005 and 2006, when the demand for them increased and their use expanded from official departments and ministries, to include residential neighbourhoods and adjacent areas, which were isolated from each other due to the sectarian differences in their populations (The official Iraqi media network, 2019).



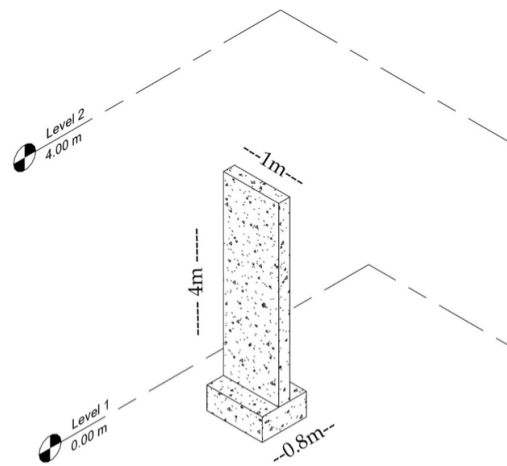
**Figure 6.** Blocks at al-Salihya/Baghdad (source: <https://www.inp.plus/index.php?s=news&id=74093>)

These concrete blocks take different sizes according to their different use:

- i. First type: 1m × 4m, often used to surround and isolate areas
- ii. Second type: 80cm x 2m, used at checkpoints at city entrances and main roads

These two types and others are still spreading densely in Iraqi cities without stopping. A new view of the city that Iraqis have not known for years, appeared after the removal of concrete blocks from most streets, official departments and residential areas, which became one city not divided into separate parts. More than 170,000 concrete blocks have been removed from the capital by various security and government agencies; But the largest share was held by the Baghdad Operations Command, whose commanders and senior officers in the field continued the process of removing concrete blocks from most areas. Lieutenant-General Jalil al-Rubaie, Baghdad Operations Commander, said that the Baghdad Operations Command began to gradually raise the concrete blocks about two years ago, but a major decision The Iraqi Minister, Adel Abdul-Mahdi, by opening the Green Zone to the citizens increased the pace of work. Rahim Al-Shammari, a researcher in security affairs, confirms that the number of concrete blocks removed from the capital is equivalent to half the number that was produced in the past years. Al-Shammari said that the raised concrete blocks are equivalent to 50 percent of the existing ones in Baghdad, and that the largest percentage of them surrounded residential and commercial areas in the

capital, while there is still a large percentage surrounding other important areas. After the concrete blocks greatly distorted the city, state institutions tried to put a solution to this distortion by painting on them and making them more acceptable to the people. Dean of the college of fine arts Al-Sabti rejected the government's previous step by instructing the painters to color these barriers and turn them into photo murals in an attempt to "beautify the prison wall". He said that "Although I was assigned by an institution to choose a group of young students to paint on concrete blocks, I was not convinced of the idea, as he prepared it the last medicine". Al-Sabti obliged to work to make the young people benefit financially, and he wanted to give an indication that there is an artistic place. Speaking to the "Official Iraqi Network", an expert in military and security affairs, Major General Abdul-Karim said that "There were 85,000 blocks, and their number increased to reach about two and a half million blocks.". Whoever wanders in Iraqi cities today sees the official buildings of state institutions have returned to the daily scene with the beauty of their scenery. And years ago, they were sheltered behind high concrete blocks, until the streets surrounding these buildings became like suffocated corridors that suggest the presence of danger everywhere. Even though many of those walls were covered with colors and pictures that some tried to decorate, they remained as they were. Deaf concrete pieces filled the place with dark visual pollution, which represented an exceptional case that the capital and other cities have experienced since terrorism began to strike everything related to Iraqi lives (Skypressiq. 2019).



**Figure 7.** Concrete block dimensions

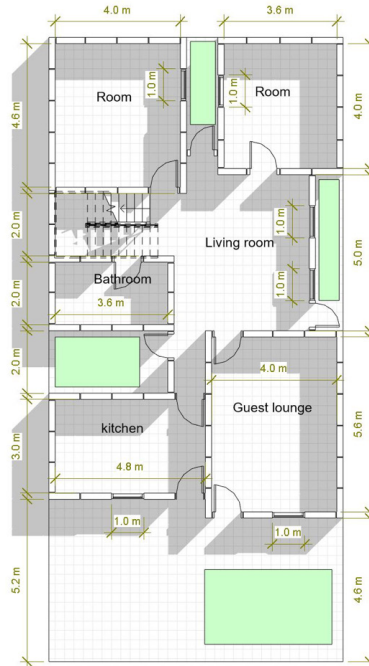
## 5. A HOUSING UNIT DESIGN PROPOSAL

According to the research, the expansion of slums in the city and the corresponding deformation of the urban facade of Karbala due to concrete blocks requires an architectural solution which aims to provide adequate housing for residents of slums and to use concrete blocks for this purpose. After studying the slums in the countries that suffer from them and considering the effectiveness of the solutions that were developed to reduce this problem and studying the current situation of the city of Karbala, the research reached a proposal of a quick-established housing unit using the concrete blocks spread in the country.

Putting forward a proposal to design a housing unit in any city requires taking into account the social, economic and environmental aspects of the place, in order to provide comfort to the occupants of

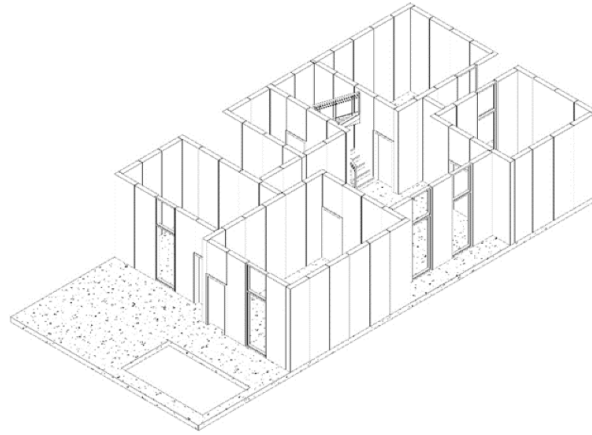
housing units, in accordance with the standards and requirements for building in the city. From the social aspect, there are families with an average of 5 members in the houses. It is evaluated that the families in these areas tend to have high privacy in terms of the design of the general layout of the housing unit, as the design has been gradual from private to semi-public. From the economic aspect, most of the slum dwellers are unemployed and with low incomes, which forced them to build settlements randomly in slums. They were unable to afford the costs of buying low-cost units because of their prices, which are considered impossible and expensive for them. Environmentally, Iraq is one of the very hot areas; so, it was taken into consideration that the residential units which are adjacent to each other provide great isolation from the hot external surroundings. And the use of internal combustible materials maintains a moderate heat level in the architectural space. The housing unit was designed according to the requirements of the Ministry of Construction and Housing for a family consisting of 5 people, with dimensions of 10 by 20 meters, that is, an area of 200 square meters. The plan of the housing unit consists of the main spaces, which are:

- a. Kitchen
- b. Two bedrooms
- c. Living room
- d. Guest lounge
- e. Bathroom

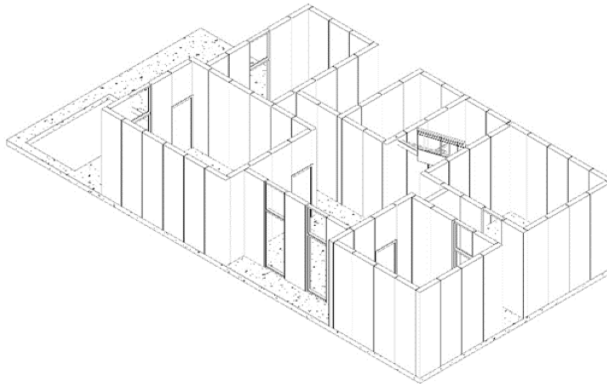


**Figure 8.** housing unit plan design

The construction by concrete blocks is similar to the ready-made casting system. To build a housing unit requires 82 concrete blocks. The concrete blocks will be wrapped by materials that make it more heat-insulating, providing environmental comfort for the residents. The concrete blocks were designed to be a foundation and a concrete wall, and this saves from the costs of building in the residential areas proposed by the research.

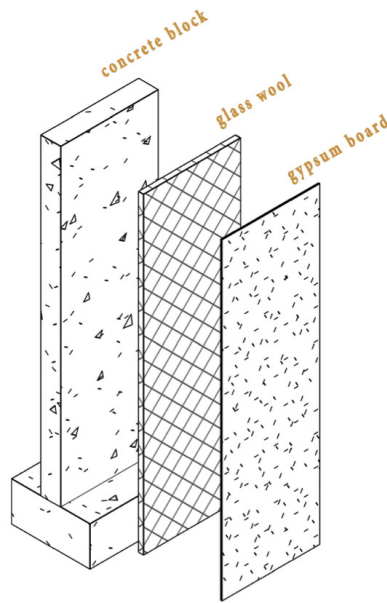


**Figure 9.** House unit design proposal, front view

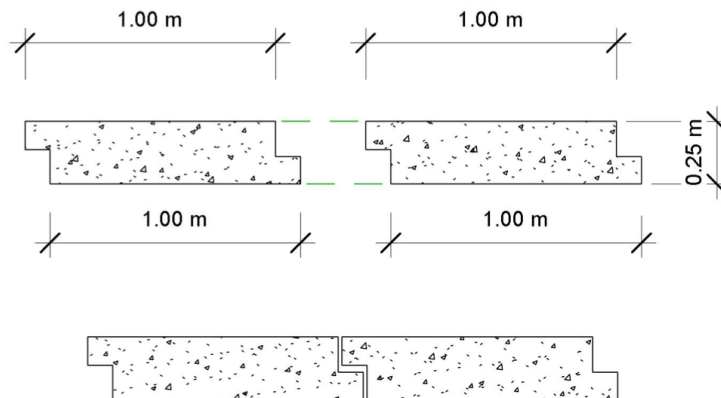


**Figure 10.** House unit design proposal, back view

The walls of the housing units are designed in three layers: concrete blocks, insulated glass wool (a fibrous insulating material made of boron silicate glass with important components such as silica sand, recycled glass, stabilizing agents and melting agents), and the outdoor finish layer which consists of gypsum boards (plasterboard or drywall which wall panels are made of a mixture of gypsum, silicone, fiberglass and covered with a layer of treated cardboard).

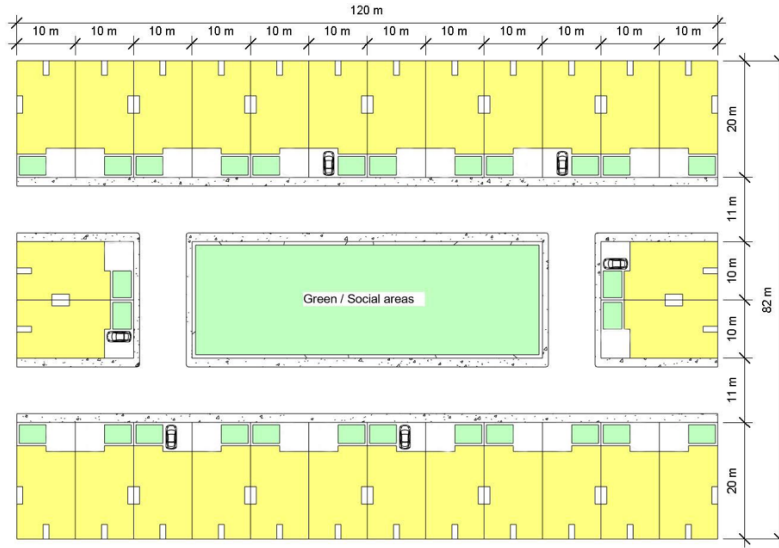


**Figure 11.** Finish layers



**Figure 12.** Interlocking concrete blocks

The concrete blocks are installed with each other to form a connected wall, which was originally designed to be a strong reinforced wall to meet the security challenges. This feature provides high durability for the residential units that will be established by the concrete blocks.



**Figure 13.** Housing block proposal

One residential block consists of 28 housing units adjacent to each other, which provides a humorous and appropriate environment for Iraq's hot climate. Each residential block contains a public middle space that can be green spaces or areas for different social events.



**Figure 14.** Housing units on site





**Figure 15.** Site elevation



**Figure 16.** Site elevation



**Figure 17.** Housing block proposal (3D)



**Figure 18.** Housing block proposal (3D)

## 6. CONCLUSIONS

The research reached conclusions after studying the slums and how they arose in the city and examining the social, economic and political reasons that helped their emergence. Finding a solution to the problem of slums that has spread in the city of Karbala can be done by knowing the reasons that led to their emergence, which came almost surprisingly in the city where the law was previously applied, and slums could not grow so easily in the city. On the other hand, the following governments did not put forward real housing projects that could provide adequate housing for low-income citizens. It can be said that the housing projects presented by the Ministry of Construction and Housing were not up to the level of ambition, as they were not taken advantage of by those with low incomes. This is what caused a large increase in slums, where low-income people did not find housing for them other than slums. There are many terms to describe the phenomenon of slums, so it was called by several names such as informal gatherings, illegal gatherings, and they are called shantytowns, irregular cities, shanty towns. One of the main reasons for choosing to live in slums is due to the presence of empty plots of land, as well as its proximity to basic services such as water, electricity and transportation routes from the city centre. The residents of these slums hope that the state will give them the right to own the land in which they live, and this is what they sometimes demand. Slums in the city of Karbala are built of brick or clay and tin. They pose a threat to the city at the infrastructural level represented by encroachment on water and electricity services and others; at the social level characterized by security consequences by crimes of all kinds; at the environmental level represented by the unhealthy residential environment; and at the economic level represented by the increase in unemployment rates. Most of the residents of slums are from outside the governorate, so the role of government institutions and civil society organizations must be activated in preparing immigration controls to cities from inside or outside, in a way that suits the governorate's absorption of numbers.

To build housing units with concrete blocks provides a fast and efficient solution to the problem of slums by considering the very big urban problem of Iraqi cities with huge numbers of concrete blocks scattered in the country. Their numbers are estimated at about two and a half million blocks. Building with concrete blocks can provide work for slum dwellers, where they can be trained to build housing units using concrete blocks, and this would reduce unemployment rates in slums. The necessity of collaboration between state institutions, housing companies and citizens can generate a new kind of social interaction and economical relation. Besides it can create a balance in urban growth between the city and the countryside, abolish the administrative boundaries between the city and the slum areas and serve the slum areas as if they are part of the city. It is important to hold continuous seminars to educate people about the reality of slums and to find design solutions to them. The government and security institutions should find alternative means for the concrete blocks due to the problems they cause at the social level of the city. The phenomenon of slums is a product of social, economic and political reasons. Therefore, in order to solve the problems of slums, a cooperation should be established between state, private sectors, institutions, and citizens, in coordination with the academics specialized in this field.

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