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Basic Units: An Architectural Proposal for the Immigration Emergency in México

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Abstract

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The present study analyzes the reuse of basic emergency shelter units, intending to adapt them as temporary shelters for deported migrants on the border between México and the United States. In the current geopolitical context, characterized by restrictive immigration policies and increased mass deportations, it is essential to provide efficient and sustainable housing solutions. The methodology used is based on a typological, functional, and structural analysis of different models of temporary shelters, evaluating their viability, adaptability, durability, thermal efficiency, and sustainability are considered, as well as integrating design strategies that improve habitability conditions. The results show that existing basic units can serve as shelters with minimal modifications, incorporating renewable energy systems, thermal insulation, and optimized space distribution. The research highlights the role of architecture as a key tool in responding to migration crises, promoting innovative and resilient solutions, and addressing the growing need for humanitarian infrastructure on the border.

Keywords: Migration Crisis; Shelters; Public Health; Basic Housing Units; Humanitarian Architecture.

1. Introduction

The Mexican territory has participated actively in migrating to the United States. Since the 20th century, it has become part of regular and irregular migration, where thousands of Mexicans have left the country searching for the American dream. However, since 1970, México has welcomed people from other countries who face danger in their countries of origin due to insecurity, whether caused by civil conflicts, natural disasters, or sociopolitical crises. México has become a transit territory for millions of migrants from Central and South America. In the case of Central American migration, the phenomenon gained strength in 1980, and 1990, the civil wars caused it, lasting thirty-six years in the territory. In the last ten years, this situation has generated a migration crisis.

One of the most substantial peaks in the migration crisis occurred during the pandemic and intensified in the post-COVID-19 pandemic. During the pandemic, the public policies of some countries closed borders and deported people who were in the cities without legal permission. In the post-pandemic era, the phenomenon gained momentum due to the different caravans organized from South and Central America that were bound for the United States.

In 2022, the research team identified that the migration problem could be approached, and it was proposed that the research be held in 2024. The main objective is to analyze data and trends to understand the needs of the migrants and propose a shelter solution in northeastern México. It is more than evident that a single architectural contribution will not solve the migration problem because migration is a complex phenomenon with multi-causal variables. It will not solve the lack of shelters in México; however, the study aims to reinforce the idea of networking for organizations that support migrants in transit. Research also supports demands for governments to restructure their migration and international protection policies to accommodate people on the move who, until now, have been excluded from the benefits they provide due to monocausal perspectives on mobility.

This article presents the research process and architectural solution for basic unit shelters on the north border of México. This project proposal arises from the need to create solutions for the migration phenomenon in México, especially in cities in the northeast, to meet the high existing demand. The aim is to create a space for migrants

where people can experience a dignified stay, with spaces designed not only to rest and stay but also for recreational, educational, and social needs, promoting physical and mental health.

The research is descriptive and qualitative, and it was developed at the School of Architecture at the University of Monterrey in the research assistant training program.

The main problem detected is the lack of decent shelters for migrants in transit in the main cities of México. The consequence of this situation is the overflow and overcrowding in the 43 existing centers in México along the territory's journey to the United States.

The second phase of the study involves selecting the city and the site. Due to the location and security of the research team, we decided to delimit the study to the states located on the northeastern border of México with the United States. The third phase of the studio included the analysis of the official data to define the direct user of the project and the feasibility of the proposed site. The next step was to analyze cases of study. The architectural program and the conceptual proposal were presented in the design stage. The final phase involves the basic unit's proposal addressed in an extreme desert climate like Tamaulipas.

2. Overview of Migration Phenomenon in México

According to the International Organization for Migration (IOM, 2022), Technical definitions and categories of migrants and migrations depend on geographical, legal, political, methodological, temporal, and other factors. Many variables define migration cases, including place of birth, citizenship, country of residence, length of stay, and other parameters. The Mexican publication Migratory Statistics mentions the definition of the irregular migrant as stipulated in actual Migration Law in México, articles 99, 100, 101, 113, and 222. (Ley de Migración, 2011) Those articles point out that people considered irregular migrants cannot prove their migration status to the immigration authority through a Mexican or foreign document proving their stay permit or temporary or permanent residence in Mexican territory.

Long-term data on international migration have taught us that migration is not uniform worldwide but responds to economic, geographic, demographic, and other factors that produce clear migration patterns, such as the migratory corridors established over the years. (IOM, 2022) According to SEGOB (2022), the Mexican diaspora is one of the largest in the world, with 13 million migrants (2017), and it is only preceded by India (15.6 million). Most Mexican migrants abroad reside in the United States of America (11.6 million). In most cases, this is a population without immigration documents, which exposes them to various risks, increasing their vulnerabilities and hindering the exercise of their rights.

It is important to remember that since the second part of the 20th century, the North American countries legislated and modified their immigration policies depending on the vision of the party in charge. In this period, there was a series of deportations in the following two categories: deported returnees and voluntary returnees. In both cases, the deportation process is lengthy. Usually, the State detains immigrants for more than a year while the Court issues a ruling for the deportation proceeding. (Patler & Branic, 2017).

According to Sohn (2022), "Between 2001 and 2019, an average of 893,000 people were deported annually, varying from 1.5 million in 2001 to 387,000 in 2017". These amounts increased with the COVID-19 pandemic in which public policy Title 42 was enacted.

Title 42 is a health policy implemented by the United States. This policy hit the service of immigration control at the beginning of the COVID-19 pandemic (Del Monte Madrigal. 2023). The arguments put forward to activate section 265 of Title 42 respond to this framework of health security that equates health threats with threats to national security, which not only has an impact on the sensitive border region but also puts anti-migration border control to prevent contagious to disease that could put citizens at risk. This initiative directly mobilized migrants and their deportation to México. This mobilization had a financial cost and a human impact in the abrupt separation of Latin American families who irregularly lived in the U.S. The fact also impacted the decrease in complaints of labor abuses and poor attention to incidents at work due to fear of being apprehended and deported.

On May 11th, 2023, Title 42 was ended by the U.S. government. As reported by the Government of México (2023), more than 2.8 million migrants were expelled from U.S. territory, and 1.6 million of these deportations were people of Mexican nationality. The entire action made it impossible to seek asylum and exposed thousands of migrants to a risk situation. (Secretaría de Gobernación, 2023) After the health emergency experienced during the pandemic, the migration phenomenon has persisted and demands solutions. Currently, caravans of migrants leave Ecuador and Venezuela and settle on the southern and northern borders of México to cross into the United States or Canada illegally.

According to the Secretariat of Immigration Affairs, the main reason for emigrating to the United States is the significant salary difference between the two countries, which makes the American country an attractive destination for a better quality of life.

2.1. Criteria for Temporary Collective Accommodation

According to the Manual for the design of temporary collective accommodation (UNHCR ACNUR, 2023), Collective accommodation shelters are facilities that seek to accommodate people temporarily. They aim to offer protection and shelter to migrants, internally displaced persons, or refugees to support them while permanent solutions are found. The research team considers that although accommodations are designed for short-term stays, they must be flexible and allow for subsequent expansion of the facilities.

The property selected offers the best opportunities, whether in terms of space, protection, or access to essential services for the installation of the shelters. Choosing a good place will facilitate the shelter, make it more welcoming,

and better impact the lives of those using it. It will also reduce the likelihood of conflicts within the area, foster positive coexistence, and reduce cases of gender-based violence. In our case, the property selected is in a safe location, not only in a social, low-risk area but also naturally. It is not prone to flooding, the winds are not very strong, and it is not prone to landslides. It is close to the Rio Bravo border, facilitating deportees' passage and control. The property has a topographical slope of 2%, allowing for improved drainage and water disposal. Another important consideration was the soil type. Sandy and rocky terrain is not recommended as it could jeopardize the development of the shelter. The selected property is in an area that allows for a safe and efficient connection to basic public services.

2.1. Methods (Case study)

On México's northern border, especially in the State of Tamaulipas, the number of migrants deported from the United States has increased. According to La Jornada, 34% of the deportations occurred in Sonora, 24% in Tamaulipas and 21% in Baja California. Migrants face extreme vulnerability due to a lack of safe, hygienic, and decent shelter. During the process, the research team analyzes rapidly deployable architectural solutions that address migrants' basic needs. The overall objective in this phase of the study is to evaluate basic architectural units that can be rapidly implemented in emergency contexts and, based on this, design a prototype of a basic housing appropriate for the climatic conditions of Tamaulipas. Below are the four case studies selected for analysis.

Tables 1 and 2. Cases of Study. Developed by the Authors.

Tables 3 and 4. Cases of Study. Developed by the Authors.

Name	La Matiz
General Information	Project developed by students of the Pontifical Catholic University of Peru
Localization	Peruvian Coast, 2015
Site information	Predominance of climatic elements • Pacific Ring of Fire, earthquakes and volcanoes • El Niño Phenomena, high temperatures, rain and flooding
Surface	4.4 m2
Characteristics	Hemispherical shape designed to accommodate up to 8 people
Materials	• Aluminum panels and profiles: lightness, economic, resistance and flexibility • Aluminum Insulation: Thermolon is reflective, waterproof, lightweight, and easy to clean.
Construction System	Radial structure that allows for efficient deployment
Architectural contribution	It considers climatic and geographical conditions, offering a light and resistant structure.
Images	 (Grozdanic, 2016), (Rodriguez Bernuy 2016)

Name	Paper Long House
General Information	Project developed by Shigeru Ban 1995
Localization	Kobe, Japan
Site information	● The 1995 Kobe earthquake left thousands of people homeless.
Surface	52 m2
Characteristics	Rectangular form
Materials	Recyclable materials
Construction System	● Foundation: Beer crates filled with sandbags ● Floor: waterproof plywood ● Frame: Vertically arranged cardboard tubes ● Roof: Stretched plastic sheeting
Architectural contribution	The cost is less than USD 2,000 and reduces environmental impact because its materials are reusable and recyclable. It is replicable and built in other locations.
Images	 https://goo.su/MvKw5c

Name	Emergency Shelter with Eco-Materials
General Information	Social Housing Laboratory (LabVIS) Enrique Mora, Jorge Ludeña, Juan Carlos Bomba, Robinson Vega
Localization	Guayaquil, Ecuador (2024)
Site information	● Project developed in response to the housing crisis in post-disaster contexts.
Surface	15 m2
Characteristics	It is based on a modular system that allows for home expansion. It has no fixed interior walls, allowing for the adaptation of spaces.
Materials	Eco-friendly materials ● Bamboo for enclosure panels ● Fibers from agro-industrial waste
Construction System	Elevation on concrete stilts, permeable envelope with cross ventilation, and raised roof with eaves.
Architectural contribution	Using eco-friendly materials and a modular system allows these homes to transcend time. The use of bamboo promotes local identity.
Images	 (Laboratorio de Vivienda de Interés Social [LabVIS], Bamba, Mora, Ludeña, & Vega, 2025)

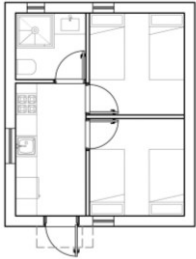
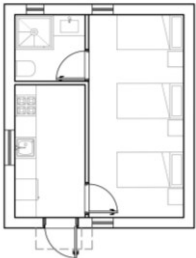
Name	Villa Fazendinha
General Information	Academic project developed by the Department of Architecture and Urban Planning of PUC Minas
Localization	Barrio Calafate de Belo Horizonte, Brasil 2023
Site information	• The project was developed in response to the lack of decent housing.
Surface	30 m2
Characteristics	It is divided into three spaces: kitchen, living room, bathroom, and bedroom.
Materials	• Cedarwood, pine wood, eucalyptus pieces, steel cables, plywood panels covered with cement board
Construction System	Three cedar wood porches reinforced by pine wood frames and steel cables. Roof made of rounded eucalyptus panels. The enclosure is made of plywood panels covered with cement board.
Architectural contribution	Integrates academic constructive practice with attention to the specific needs of social groups in vulnerable situations through creating a project.
Images	 (Laboratório de Experimentação Construtiva – PUC Minas, 2023)

3. Results

The architectural proposal resulted in basic modular units measuring between 23 and 28 square meters, accommodating three to six people, depending on the unit's internal configuration. A basic unit allows for accommodating families of six or affinity groups. The modular design allows for larger configurations to be organized into sectors. The proposal is divided into four areas: Reception area, bedroom areas, open and common areas, and administration and services areas. This study focuses on the bedrooms' living area, where guests are expected to enjoy a short stay with adequate hygiene and safety standards.

Table 5. Typologies of Basic Units. Developed by the Authors.

TIPOLOGY	m ²
1 	27.51 m ²
2 	23.62 m ²

3 	27.51 m²
4 	23.62 m²
5 	27.51 m²

Basic units are exclusively for residents of the accommodation. Groups of 40 or 50 people will organize them, which means that will be around 8 or 12 units together. The dormitories were planned in four sectors: one sector for men, one for women, one for families, and the last sector for inclusive groups. Each type of accommodation will have its private restroom.

Some of the features considered in the design included natural cross-ventilation to respond to the region's hot desert climate. Another critical point was the inclusion of separate spaces for basic activities within the units. Basic needs such as sleeping, storage, and hygiene were considered, ensuring a minimum level of privacy for each inhabitant. The morphology was conceived in a trapezoidal shape inspired by the Mayan pyramids' geometry, allowing for greater heat dissipation and structural stability. Although the selection of materials will be part of a second phase, the aim is to use materials that are easy to assemble, transportable, durable, and lightweight will be considered. Furthermore, the modular design allows for grouping into larger configurations, creating cores within the shelter without compromising ventilation or circulation.



Figure 1. Proposal of Basic Units Shelters. Developed by the Authors.



Figure 2. Proposal of Basic Units Shelters. Typology 4. Developed by the Authors.

4. Discussions

The proposal is distinguished by its cultural, spatial, and climatic integration. The proposed basic units incorporate a Mexican architectural identity that can foster a sense of belonging, reduce post-deportation stress, and enhance the perceived dignity of the shelter. The occupancy range per unit is flexible, allowing for scalability based on migratory flow. Cross ventilation and the pyramidal shape contribute to reducing energy use for cooling, which is essential in areas without stable electrical infrastructure. The prototypes will be evaluated for thermal performance and structural wind resistance in the second phase.

5. Conclusions

The basic units present a viable solution for housing three to six people and are designed for short-term stays. The proposals range from 23 to 28 square meters, allowing for operational flexibility in installing shelters based on demand. The architectural design incorporates passive strategies that promote thermal comfort within the enclosure. One of these is cross ventilation, which effectively responds to the climatic conditions of Tamaulipas, a state with a hot and humid climate. The proposal considers the interior space layout, prioritizing the occupants' privacy and dignity. A fundamental principle in emergency humanitarian assistance. Another highlight is the Mesoamerican-inspired trapezoidal shape, based on the geometry of Mayan pyramids. It serves a structural and thermal function and alludes to the native people of México. The trapezoidal shape was a decision made as a morphological strategy to contribute to creating a more humanized and culturally contextualized environment, thus contrasting with generic solutions that tend to depersonalize the living space.

It is important to note that the final selection of materials, thermal evaluation, and structural validation will be carried out using physical prototypes developed in the second phase of the research. As a research and design team, we believe the proposal for basic units significantly contributes to existing temporary shelter solutions because it contextualizes and considers the basic needs of repatriated migrants. The direct users of this project are people in highly vulnerable situations, so proposals with a humanitarian and culturally sensitive approach are becoming increasingly necessary.

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Conflict of Interests

The Author(s) declare(s) that there is no conflict of interest.

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