

Paraplegics of social interest housing in Los Mochis, Sinaloa. Mexico

Armando Ibarra-Martinez^{1,2}, Carlos Alberto Fuentes-Perez²

¹ TNM/ITLM Tecnológico Nacional de México / Instituto Tecnológico de Los Mochis, Mexico.

² FADU/UAT Facultad de Arquitectura, Diseño y Urbanismo / Universidad Autónoma de Tampico, Mexico.

Corresponding Author: Armando Ibarra-Martinez

Abstract: *In the current architecture, the concept of universal access as a necessity in new architectural projects has been expressed, its outcome has given respectful, healthy, functional and comprehensible access to the disabled in all genres of buildings, especially social interest housing. In this article we analyze the regulations for the accessibility of the paraplegic user in the home of the city of Los Mochis, Sinaloa, Mexico making a great emphasis on the most intimate space of the house, the bathroom. Taking into consideration national accessibility regulations such as: The normative study of the Design and Construction Criteria for Adaptable and Accessible Housing CONAFOVI, and the Manual of Accessibility Technical Standards CDMX and Technical Document of Accessibility for Persons with Disabilities, Blue Manual, UAEM. These documents being valued for their content of technical standards to avoid future architectural barriers, however it was decided to follow the guidelines of the CDMX Accessibility Standards Manual as it is a document endorsed by government institutions and professional associations in order to generate better quality of living spaces for a paraplegic in a wheelchair.*

Keywords: *universal access, social interest housing, bathroom, regulations, paraplegia*

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I. Introduction

Adequate housing should provide more than four walls and a roof. It must also satisfy several conditions so that a particular form of housing can be considered "adequate housing". Those elements are as fundamental as the availability of basic housing supply (UN-Habitat 2010).

Regulations are obligatory during professional/ethic/responsible design planning to meet paraplegic needs, ensuring a safe and comfortable space for guests when moving within the home. Applying technical regulations for people with disabilities should not aim creating a bubble to isolate houseguests from the physical obstacles architects themselves generate in all areas of the home.

Housing is assumed as a health agent for its inhabitants, taking into account the risk factors to reduce or control them, and covering both the functional provision, and the promotion of an adequate physical, social and mental development, through the control of the conditions of health, hygiene, security and privacy, as well as education in lifestyles and healthy habits (López Catalán, M et al, 2015).

Within the home there is a relevant space for its considerable number of activities, the standardized dimensions of its furniture, its limited space of circulation that is sometimes also considered as a work area and a space for a single user: the bathroom. This space of housing is the most complicated place to design and one of the highest challenges for architecture professional and students (Gutiérrez Brezmes, J, L, 2017).

The aspiration towards greater accessibility has led to the consolidation of the idea of "design for all" or "universal design". The design for all idea aims to take into account, in the design phase itself, the accessibility requirements derived from the different types and degrees of people's functional capacity. Failure to meet this objective in design processes inevitably leads to discrimination, exclusion and problems of social participation for large groups (Toboso Martín, M y Rogero, García, J, 2012) Traditionally, efforts to combat discrimination due to lack of access have focused on the elimination of physical and architectural barriers that limit activity and restrict the social participation of people with disabilities. However, in the last decade a wider and universal vision of accessibility requirements has been developed, with the objective of removing obstacles and barriers of whatever kind, Law 51 (BOE, 2003).

The above mentioned law is generally considered as the foundation of international human rights standards. Approved in 1948, disability is seen as a general term that covers deficiencies, limitations of activity and restrictions on participation. Deficiencies are situations that move a body structure or function; the limitations of the activity are difficulties to execute actions or tasks, and the restrictions of the participation are situations of vital participation. Therefore, disability is a complex phenomenon that reflects an interaction

between the characteristics of the human organism and the characteristics of the society in which it lives, World Health Organization (WHO, 2016).

The regulations applicable to paraplegic home users, the National Commission for Housing Development (CONAFOVI), the Government of Mexico City (CDMX) and the Autonomous University of the State of Morelos (UAEM) emphasize the need to strengthen a culture of respect, tolerance and dignity, however there are other physical barriers, which are an impediment to the full social integration of this group of the population. One of the main conditions for people with disabilities to participate fully in social life is that they must access all public and private spaces. Based on this assertion the National Housing Program 2014-2018, published in the Federation Official Gazette on May 30, 2014, indicates that housing is the place where the family consolidates its heritage. The National Housing Program 2014-2018, includes the objectives of the National Housing Policy presented by the President of the Republic Enrique Peña Nieto on February 11, 2013, which presents a new model focused on promoting the orderly and sustainable development of the sector; to improve and regularize urban housing; as well as to build and improve rural housing.

The Housing Law in article 7 states that the programming of the public sector in terms of housing will be established, among other instruments, in the National Housing Program; and in article 3 (DOF, 2014) that said program will be formulated by the National Housing Commission (CONAVI), approved by the President of the Republic Enrique Peña Nieto by decree and will be subject to a permanent process of control and evaluation in the terms prescribed by said legal precept. Government Agencies that will participate in the execution of the National Housing Programs are the following: Secretaría de Desarrollo Agrario, Territorial y Urbano (SEDATU), Comisión Nacional de Vivienda (CONAVI), Comisión para la Regularización de la Tenencia de la Tierra (CORETT), Fideicomiso del Fondo Nacional de Habitaciones Populares (FONHAPO), Instituto del Fondo Nacional de la Vivienda para los Trabajadores (INFONAVIT), Fondo de la Vivienda del Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado (FOVISSSTE), Sociedad Hipotecaria Federal (SHF), Organismos de vivienda estatales, municipales y del Distrito Federal (CONAFOVI) signed a Collaboration and Agreement Settlement to promote and apply housing actions that contribute to the social integration of people with disabilities.

Based on this agreement, CONAVI analyzes the accessibility that is of vital importance since it helps reducing the demand for people with different disabilities or with some mobility impairment, this should help understand the disability from a physiological and psychological perspective, which it greatly promotes social relationships and the quality of life of the paraplegic, which is intended to create a complementary analysis for the application of regulations that should be included in the design and modification of housing for the benefit of people with paraplegia, as well as the elderly or with some temporary limitation. Based on this agreement, emphasis is placed on two basic concepts that must be included in the design, production and housing marketing process, referred to in the "annual call for the national housing award" (CONAVI 2016).

Accessibility must be a project that promotes the adoption of design and construction guidelines applicable to housing with easy access in wheelchairs, in common areas, roads, equipment and urban services, in order to guarantee accessibility in the physical environment, to people with disabilities as well as the elderly, to be implemented in all states of Mexico, which allows them to move freely in dignifying and safe conditions. Based on the aforementioned agreements, the normative study edition of the Design and Construction Criteria for Adaptable and Accessible Housing was born (CONAFOVI), Manual of Accessibility Technical Standards (CDMX) and Accessibility Technical Document for Persons with Disabilities, Blue Manual (UAEM).

Which serve as a basis to create and design spaces, eliminating physical barriers in the construction of service units, adhering to the provisions of Articles 173 and 174, Fraction VI and 180 of the General Health Law (DOF, 2016) and Article 21 of the Internal Regulation of the Ministry of Health, which issues a technical standard that is mandatory for the adaptation of facilities that enable access to people with special needs. This case in particular has the purpose of showing how the life of a paraplegic can change by applying the accessibility regulations in the bathroom of social interest housing in the city of Los Mochis in the state of Sinaloa in Mexico presented below.

II. Materials And Method

Simplicity and familiarity is the key that will facilitate access and use of the bathroom. The bathroom must be free of barriers and steps circuit from any point of the building. The fundamental aspects of design of a bathroom are the dimensions and distribution. (Boudeguer, A & Squella, P, 2010). To achieve access in a wheelchair so that disabled users can perform their physiological needs and move within the bathroom with Technical Regulations of Accessibility CDMX originated architectural changes and sacrifice of furniture so that their movements were in 1.70 x 1.70 m. The accessibility is determined by the functionality of the person, and the demand of the environment in which it operates (Alonso, F, 2006).

The entrance to the bathroom will be by means of a sliding door to save swing space. The sink will become part of the social area assisting the mobility of the paraplegic in the bathroom. The toilet bowl and

shower bench will be at a height of 0.45m. Flush controls: If plumbing valves are located directly behind the toilet seat, discharge valves and related pipes can cause injury or imbalance when a person leans back against them. (ADA, 2010.)

The mobility of the paraplegic in the bathroom will be supported by tubular bars to PROVIDE SAFETY of movement from one piece of furniture to another without causing mishaps and will be placed at a height of 0.80 m. The fixation OF BARS will only be on walls and floors so both the safety factor will be priority in the bathroom as shown in the architectural solution with CDMX regulations.

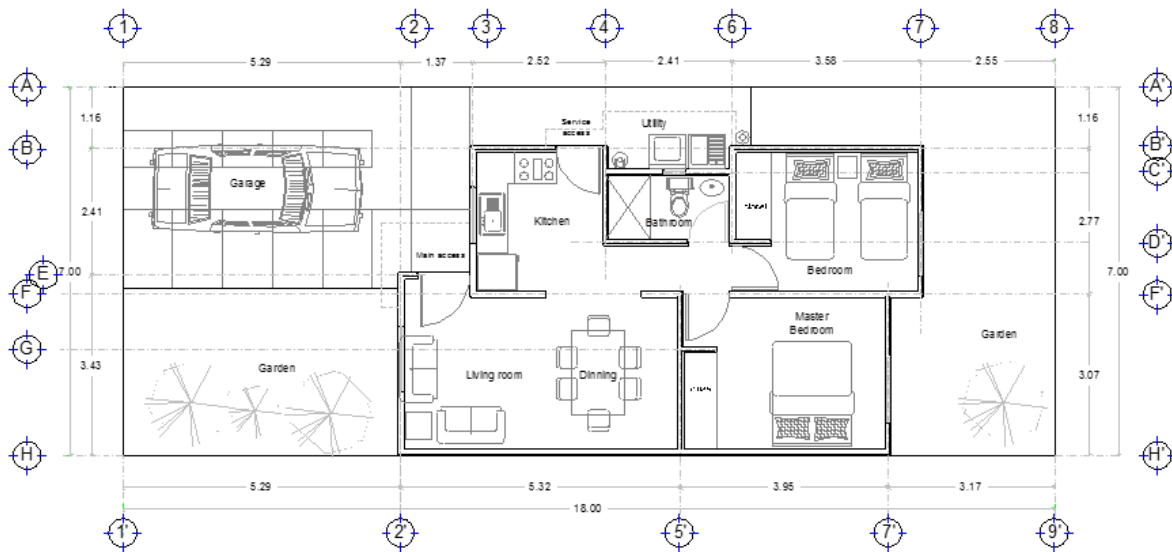
III. Results And Discussion

In the obtained result the breadth of the bathroom is shown so that the paraplegic can turn around in the wheelchair for adequate use. In addition to providing mobility, it generates benefits for the physical health and life quality of the user.

It is appreciated that the presence of the accessible bathroom in the home, does not represent a shocking increase in the surface of the same and yet provides a dignifying space, in addition this change does not disturb paraplegic activities during the stages of its life cycle.

"Where there is cleanliness, the fortune never degenerates into misery". If hygiene is vital for any person, in a paraplegic is fundamental and basic for health related and quality of life. Outstanding neatness! (Soto Mendoza, R. 2007).

By placing the wheelchair between the shower and the toilet seat was found to be the most appropriate in the bathroom, thus, it offers the option to move according to the physiological needed to be met. The area of the shower shows that anthropometrically it is adapted to the paraplegic by the proximity of the walls and the tubular bar provides security, the telephone type shower offers more ease to bathe without having to make too many movements and cause accidents. All the walls will be covered with tile for easy cleaning; the toilet bowl is placed on one side of the wall to facilitate support on it and tubular bars, giving security and confidence to the realization of the needs, the main objective offered by this bathroom design is to comply with CDMX regulations.



Architectural Plan

Figure 1. Prototype architectural plan 52.38 m². MEZTA Group, Los Mochis, Sinaloa Mexico

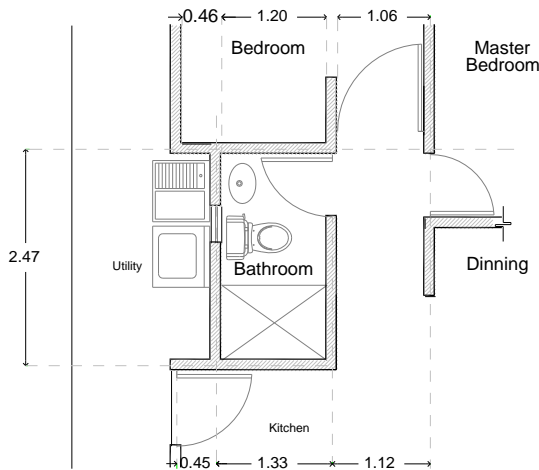


Figure 2. Prototype architectural plan, Main bathroom 52.38 m² Grupo MEZTA.

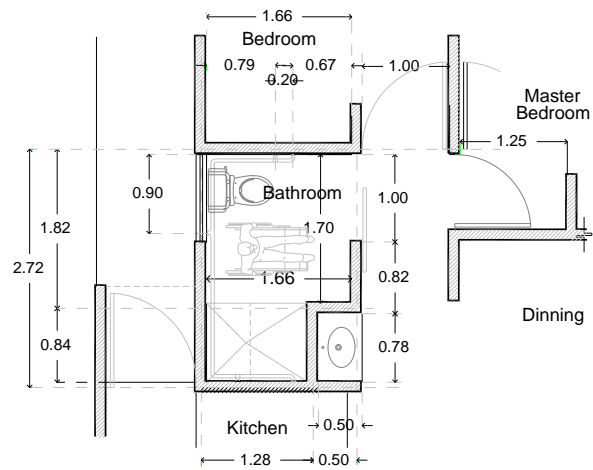


Figure 3. Prototype architectural plan Main bathroom 52.38 m². N.T.A CDMX.



Figure 3. Aerial view of the main bathroom



Figure 4. Main bathroom

IV. Conclusion

The accessibility to bathroom must be focused with great importance as for all the spaces of the house, keeping in mind that the function of the house is also that of welcoming the paraplegic persons, because the inclusion of them the society demands it. The accessible bathroom of the home must meet the needs of having a home with hygienic conditions and will also allow paraplegic to live without mobility limitations.

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