

# Design of Subsidized OSH's Housing Estates in Post-War Spain. The case of Zaragoza (1954-1964)

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Received: 2020-07-07 | Final version: 2022-02-07

## Abstract

This paper presents the analysis of the design of dwellings in ten housing estates built by the House Building Union (Obra Sindical del Hogar, OSH) in the city of Zaragoza between 1954 and 1964. All of them were designed by the Spanish architects Alejandro Allanegui and Fausto García Marco. The first part of the text explains the Franco Regime's regulation on housing subsidies and how it promoted the construction of dwellings of three or more bedrooms. It provides data on the number of dwellings built in the city of Zaragoza, which allows an understanding of the relevance this housing had for the urban growth of the city. Therefore, it presents the urban planning of these housing estates and how their peripheral location exacerbated the social differentiation of the poor families who were intended to live there. The second part of this research analyses the dwellings' designs, their standardisation and variations, combining the reproduction of the original plans and drawing of the projects and original diagrams. The article discusses how the technical and building improvements of the later housing estates did not affect the interior organisation of the dwellings, which is presented because of the standardisation process created.

**Keywords:** Social Housing; Franco's regime; Spanish architecture; Zaragoza

## Citation

Pérez-Moreno, L.C. et al. (2022). Design of Subsidized OSH's Housing Estates in Post-War Spain. The case of Zaragoza (1954-1964). *ACE Architecture, City and Environment*, 16(48), 9526. DOI: <http://dx.doi.org/10.5821/ace.16.48.9526>

# Diseño de conjuntos de vivienda subvencionada de la OSH en la España de posguerra. El caso de Zaragoza (1954-1964)

## Resumen

Este trabajo presenta el análisis del diseño de las viviendas de diez bloques de viviendas construidas por la Obra Sindical del Hogar (OSH) en la ciudad de Zaragoza entre 1954 y 1964. Todas ellas estuvieron diseñadas por los arquitectos españoles Alejandro Allanegui y Fausto García Marco. La primera parte del texto explica la regulación del Régimen de Franco sobre las subvenciones a la vivienda y cómo se promovió la construcción de viviendas de tres o más dormitorios. El artículo proporciona datos sobre el número de viviendas construidas en la ciudad de Zaragoza, lo que permite comprender la relevancia que estas viviendas tuvieron para el crecimiento urbano de la ciudad. Además, presenta la planificación urbana de estos conjuntos y cómo su ubicación periférica exacerbó la diferencia social de las familias pobres que pretendían vivir allí. La segunda parte de esta investigación analiza los diseños de las viviendas, su estandarización y sus variaciones, combinando la reproducción de planos originales y el redibujado de los proyectos y de diagramas originales. El artículo analiza cómo las mejoras técnicas y constructivas de los conjuntos de vivienda más tardíos no afectaron a la organización interior de sus viviendas, lo que se presenta como consecuencia del proceso de estandarización creado.

**Palabras clave:** Vivienda social; régimen de Franco; arquitectura española; Zaragoza

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## 1. Introduction

Between 1939 and 1964, 10,000 new dwellings were constructed in the Spanish city of Zaragoza, which benefitted from housing subsidies from the Regime of General Franco (1939-1975). During the 1940s Zaragoza grew in population from 200,000 inhabitants to 250,000, and by the end of the 1960s the population had already exceeded 450,000. Despite the cultural regression that the country suffered during this period, the Regime's institutions and private companies promoted the construction of different kinds of dwellings, from the most basic homes for the poorest social classes to homes constructed for the middle classes (Sambricio, 2003).

Of the various institutions that the Regime created with housing related powers, the House Building Union (*Obra Sindical del Hogar*, OSH) was especially important, charged with promoting most of the country's house building, particularly from the middle 1950s onwards. Architects associated with the OSH were responsible for the architectural design and urban planning of various residential estates that were characterised by the austerity of their form and construction. The OSH had a technical department that was charged with writing reports and technical instructions, working in close collaboration with the National Housing Institute (*Instituto Nacional de Vivienda*, INV), created in 1939.

In addition, the OSH technicians ensured compliance with the regulatory standards through the approval process of the various projects that came before them. The OSH supervised all the national and provincial planning offices that were charged with carrying out the architectural designs, project management and building inspections throughout Spain. Working within the department, were architects, quantity surveyors and civil engineers that formed part of the OSH's corps of experts. The Regime approved housing plans made it possible for young Spanish architects, among whom were many belonging to the 'first post-war generation' (Flores, 1961), such as Rafael de Aburto, Luis Martínez-Feduchi, José Antonio Coderch and Francisco Asís Cabrero, to enter into practice, designing and building residential apartment blocks.

In the case of the city of Zaragoza, the architects Alejandro Allanegui and Fausto García Marzo participated in the design and construction of ten housing estates that included almost 5,000 dwellings. The first part of the article explains the Franco Regime's regulation on housing subsidies, the categories of dwellings it creates, and how it promotes the construction of dwellings of three or more bedrooms. It provides data on the number of dwellings built in the city of Zaragoza, which allows an understanding of the relevance these housings had for the urban growth of the city.

Therefore, it presents the urban planning of these housing estates and how their peripheral location exacerbated the social differentiation of the poor families who were intended to live there. The second part of this research analyses the dwellings' designs, their standardisation and variations, combining the reproduction of the original documents of the projects and original diagrams. The article discusses how the technical and building improvements of the later housing estates from the 1960s did not affect the interior organisation of the dwellings, which is argued as a consequence of the standardisation process practiced in the former decade.

## 2. Brief Historical Context

Despite Spain's ruinous and isolated situation in the post-war era, the social necessity to provide homes to thousands of families opened opportunities to put into practice ideas and discussions around housing subsidies.

As Carlos Sambricio stated<sup>1</sup>, Franco's Regime (1939-1975) approved basic laws concerning housing which were to regulate the construction of a great number of subsidised housing estates planned throughout the country (Sambricio, 2003); these were the housing acts of 19 April 1939 and 15 July 1954. At the same time as this legislation, various institutions and organisations were created that regulated and delineated a framework for the design and construction of new towns and housing estates intended to provide homes to different types of families. The National Housing Institute (INV), part of the Ministry of Organisation and Trade Union Action (*Ministerio de Organización y Acción Sindical*), existed alongside other autonomous organisations, such as the National Institute of Settlements (*Instituto Nacional de Colonización, INC*), the General Directorate of Devastated Regions<sup>2</sup> (*Dirección General de Regiones Devastadas*) and the General Directorate of Architecture (*Dirección General de Arquitectura*). This governmental apparatus was augmented in 1939 by the creation of the National Delegation of Trade Unions (*Delegación Nacional de Sindicatos*), the only central union authorised by the Regime and like the INV, a dependent organ of the Ministry of Organisation and Trade Union Action. Attached to the Delegation, was the National Union for House Building and Architecture (*Obra Nacional del Hogar y la Arquitectura*), also known as the House Building Union (*Obra Sindical del Hogar, OSH*), an organisation which, originating principally out of the 1954 Housing Act, operated in full collaboration with the INV as the main promoter of subsidised housing in Spain. Between 1939 and 1960 it managed to erect 138,000 dwellings (Cazorla, 2010).

The Protected Housing Act of 1939 stipulated who was able to build the Regime's subsidised housing, clearly privileging initiatives that were non-profit making. Town halls, provincial councils, trade unions, social organisations, companies that built housing for their own employees, charities, savings banks, cooperatives and entities or individuals that, even if they were profit making, intended to set aside a proportion of the housing at reduced rents, were able to benefit from the Regime's subsidies. The first National Housing Plan was assigned to the INV in 1944 with the aim of establishing guidelines for the following decade, although nothing was set down in legislation. The draft plan was written by the architect José Fonseca Llamedo and proposed the building of 1.4 million dwellings throughout Spain. Fonseca was always aware of the impossibility of achieving this target given the extreme economic depression that Spain was experiencing, the state of apathy prevailing in many of the Regime's administrations, and a severe shortage of construction materials (Sambricio, 2003). This stemmed from the politics of autarchy governing the laws of that period, which was aimed at creating a self-sufficient economy<sup>3</sup>. As a result of the subsequent 1954 Housing Act, the main non-profit making developer became the House Building Union (OSH), inaugurating a more efficient and productive period than previously, during which the new National Housing Plan and the Trade Union Housing Plan were approved in 1955 (Sambricio, 2003).

From 1939 to 1953, the OSH built 38% of the total Regime subsidised housing in Spain, although the total number was quite low, considering the targets set in the original plans (Sambricio, 1999). In Madrid this entailed the construction of 2,496 homes: whilst in Zaragoza a meagre total of only 456 homes were constructed. However, between 1954 and 1975, the OSH built 19,092 homes in Madrid. In Zaragoza the total was 4,923 dwellings distributed in 10 housing estates, ten times more than during the previous phase, in almost the same time frame (Table 1).

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<sup>1</sup> The Spanish Historian of Architecture Carlos Sambricio is one of the main researchers on social housing during Franco's Regime in Spain (Sambricio, 1999; 2003)

<sup>2</sup> The General Directorate of Devastated Regions was dependent on the Ministry of Governance and the General Directorate of Architecture until 1957, and then the INV until 1977. The National Institute of Settlement (INC) was part of the Ministry of Agriculture, and was also created in 1939.

<sup>3</sup> Between approximately 1939 to 1947, there arose a tendency towards the protection of the state's economic interests against foreign competition, as a nationalist vindication of economic self-sufficiency and support for national production at any cost, or autarchy Protectionist laws were passed in 1939 with the aim of consolidating the degree of autarchy: the Law of 24 October on the protection and promotion of national industry and the Law of 24 November on the organisation and defence of industry. In addition, the Decree of 11 March 1941 on restrictions on the use of iron in building had a severe impact on building construction, which in the 1940's forced the industry to resort to traditional building techniques.

Other entities can be added to the OSH that developed other residential estates in the city, although they did not build as many dwellings: these included the Zaragoza Municipal Housing Institute (*Instituto Municipal de la Vivienda*), the town council and the religious charitable institutions, Montemolin Religious Works Trust (*Obras Religiosas de Montemolin*) and Christian Homes (*Hogar Cristiano*). The local authorities and charity organisations together developed 11 estates, with a total of 1,992 homes. Furthermore, there were business initiatives driven by private interests, among which may be noted, the Zaragoza Tram Company (*Sociedad Tranvías de Zaragoza*) for the Vizconde Escoriaza development built at the end of the 1940s, and a RENFE (Spanish National Railways) estate; both were intended to provide housing to their workers, just as the legislation envisaged. The total number of units of all the private initiatives that were built from the end of the Civil War to the beginning of the 1960s was 2,936 subsidised dwellings in a further 11 housing estates. Therefore, considering all the housing estates built in Zaragoza, the grand total of dwellings came to 9,945 (Pérez-Moreno and Kurtz, 2018; López-Mesa, 2018).

Table 1. Categories of Housing Estates constructed by the OSH in Zaragoza

Law in force	Nº	Housing Estate	Date of project	Architects	Nº of dwellings	Type of home
1 <sup>st</sup> Phase 19 April 1939	1	San Jorge	1 <sup>st</sup> Phase 1946	Alejandro Allanegui, José Yarza, Fausto García Marco	210	Protected home
			2 <sup>nd</sup> Phase 1952	Fausto García Marco	248	
2 <sup>nd</sup> Phase 24 July 1954	2	Girón	1 <sup>st</sup> Phase 1954	Alejandro Allanegui, Fausto García Marco	400	3rd Category
			2 <sup>nd</sup> Phase 1955		390	3rd Category
	3	Arzobispo Domenech	1954		256	3rd Category
	4	General Urrutia	1 <sup>st</sup> Phase 1954		288	3rd Category
			2 <sup>nd</sup> Phase 1955		50	3rd Category
	5	Fray Julián Garcés	1 <sup>st</sup> Phase 1955		180	3rd Category
	6	Casta Álvarez	1955		285	2nd Category
	7	Alfárez Rojas	1957		204	2nd Category
					452	3rd Category
	8	Teniente Polanco	1957		Fausto García Marco	162
9	Ortiz de Zárate	1960		264	Social type	
10	Balsas de Ebro Viejo	1964	Alejandro Allanegui, Fausto García Marco, Jesús Guindeo, José Luis de la Figuera, Lorenzo Monclús	42 352 970 170	1st Category 2nd Category 3rd Category Social Type	

Source: Data acquired by the authors.

### 2.1. Categories of Subsidised Housing as Urban and Social Classification

Under the Franco Regime house building acquired an important symbolic value as a tool of national reconstruction. In addition to solving the problem of a lack of housing and sending the message to the people that the new state would take care of necessities, house building in the country was used as a means of social classification and organisation (Rojo de Castro, 2003).

The various housing acts incorporated a classification of housing types based on floor area, average cost, repayment instalments, number of bedrooms, etc. The Regime created a schema for social and economic differentiation by proposing homes for the working classes (third category dwellings, social types, etc.) the lower-middle and upper-middle classes (first category dwellings, second category dwellings) and even for class suburbs, housing for the military — the classification of military homes was one of the most striking examples, segregated into types based on the rank of the heads of family (generals, officers and NCOs)— or for civil servants, (Table 2).

Table 2. Categories of subsidised housing established since 1954

	Type of Homes	Floor Space (m2)
National Housing Plan (1955)	First Category Homes (C1)	90 m2
	Second Category Homes (C2)	65 m2
	Third Category Homes (C3)	54 m2
	Social Type	45 m2 (Increased to 50 m2 from 1956)

Source: Data acquired by the authors.

As Luis Rojo de Castro states (2003), the new regime became in time the father protector and builder philanthropist, and the many variants of housing plans enabled them to physically organise the urban and social fabric of the cities. Consequently, both the architecture and the architects of the new state became a functional instrument that ordered and structured the growth of Spanish cities, also giving shape to the sociological plan in which each family's home matched the role they played in the functioning of the State, in adherence to the Regime's particular values. It therefore formed a setting for social differentiation that clearly affected the levels of habitability and comfort of those citizens most in need. As the patrons of these estates argued "the lower classes, always having fewer personal effects, settle for less. The upper classes, often want more floor space for all their furniture"<sup>4</sup> (Rojo de Castro, 2003, p.234).

Thus, we can find, in texts from the late 1940s on the need to build social housing for the Spanish working classes, passages such as: "we know that some prestigious figures advocate the benefits of constructing affordable dwellings on the upper floors of luxury buildings. [...] This forced cohabitation of the opposite extremes of the social order is an attempt to establish a mutual understanding and appreciation to strengthen the fraternal ties that should unite us all. Such an initiative may have the best of intentions, but, in our opinion, suffers from a singular naivety. This living together reveals differences that would not always overcome the refined habits of the well-to-do and the resignation of the proletariat. [...] However, close harmony, is generally not only the product of shared ideals and feelings, but also of the same tastes, education, and enthusiasms. [...] Whether you like it or not, the major cities have to be ringed by working class districts, that is, by industrial zones where the factories, workshops, and other industrial units are located and situated close by, the dwellings of the staff employed to work there. This is the central idea that inspires our choice of positioning for our project"<sup>5</sup> (Sánchez Ventura, 1949, p.43).

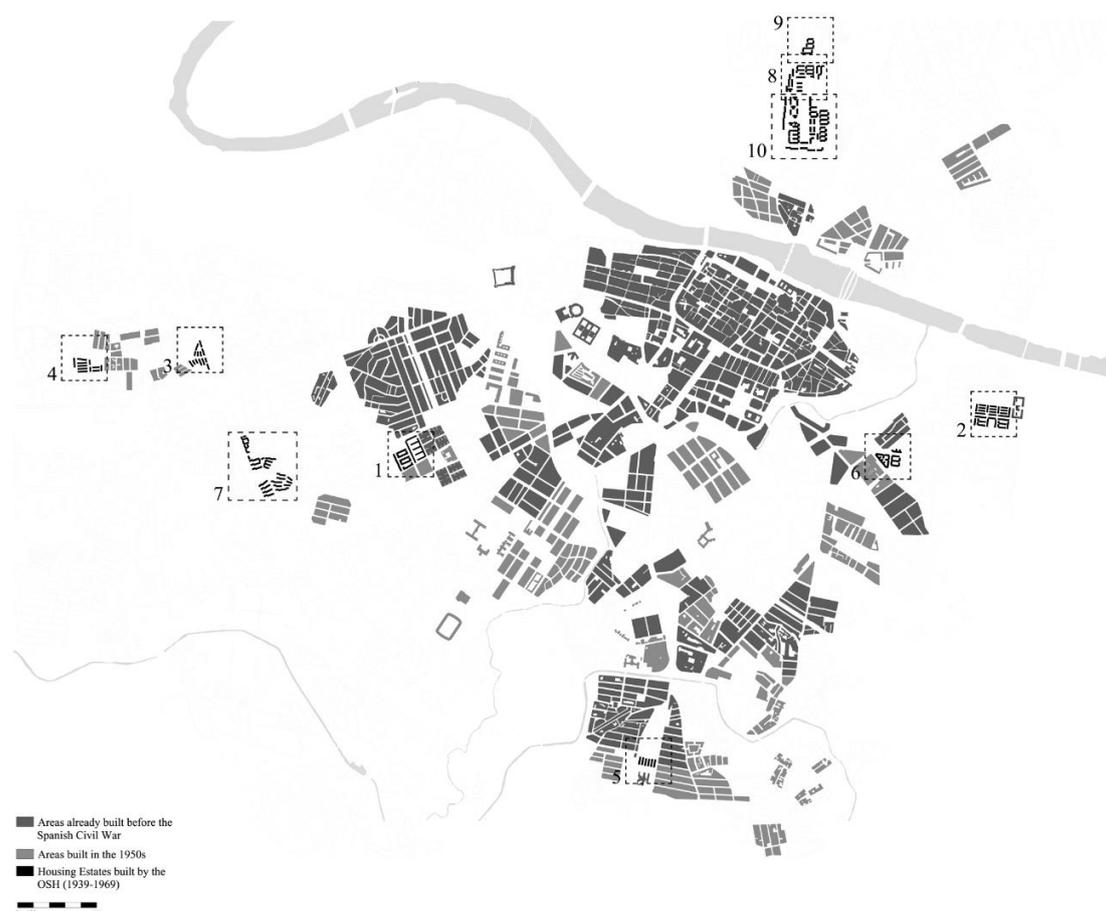
<sup>4</sup> Original quotation: "las clases inferiores, siempre escasas de ajuar, se conforman con poco. Las superiores, a veces, desearían muchos metros cuadrados para su abundante mobiliario".

<sup>5</sup> Original quotation: "sabemos que algunas prestigiosas personalidades sostienen la conveniencia de hacer viviendas baratas en los últimos pisos de los edificios lujosos. [...] Se pretende así establecer una forzada convivencia entre las clases más extremas de la escala social, buscando el mutuo conocimiento y la reciproca estimación para fortalecer los vínculos de la fraternidad que a todos deben unirnos. La iniciativa no puede ser mejor intencionada, pero, a nuestro juicio, adolece de ingenuidad. Esa convivencia es origen de contrastes que no siempre lograría superar la delicadeza de los opulentos y la resignación de los proletarios. [...] Por otra parte, la buena armonía es, por lo común, fruto no solo de unos mismos ideales y unos mismos sentimientos, sino también de unos mismos gustos, una misma educación, unas mismas aficiones. [...] Se quiera o no se quiera, las grandes ciudades han de verse circundadas por los barrios obreros, es decir, por las zonas industriales donde se hallan emplazadas las fábricas, los talleres, los diversos centros de trabajo y, en sus proximidades, las viviendas para el personal afecto a los mismos. Tal es la idea matriz que en la cuestión del emplazamiento inspira nuestro proyecto".

Therefore, the housing standards created under the Regime's auspices set out clear specifications for the planning of the different dwelling blocks and their respective interior dimensions, both as regards common spaces and for the specific type of home that was designed.

In the case of the city of Zaragoza, most of the OSH estates were built for the working classes, as Table 1 presents. These include protected housing for the San Jorge estate under Law 39, and 3<sup>rd</sup> Category Homes of a maximum of 54m<sup>2</sup> in most of the remaining estates built between 1954 and 1964 —only the Casta Álvarez estate (1955) was entirely planned for 2<sup>nd</sup> Category Homes of 65m<sup>2</sup> maximum. Although, in the 1957 Alférez Rojas Housing Estate, and the Balsas de Ebro Viejo Housing Estate of 1964, various categories of homes were constructed, of 2<sup>nd</sup> and 3<sup>rd</sup> Category in the former, and 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> Category and Social Type in the latter. However, with both estates the majority of the dwellings were of the lowest and smallest category, intended for the poorest families. On top of these, these estates were located in the periphery of the city, as Figure 1 shows, which caused communication problems between the centre and the outskirts and exacerbated the social differentiation of the families who were intended to live there. The prohibition in the guidelines to build in urban areas classified as historical with artistic values (Lasso de la Vega Zamora, 2003) meant the city's periphery was favoured for these new housing estates. The various tramlines (which no longer exist), and a few public bus lines at that time were the most important means of communication with the city centre for the tenants of the hundreds of dwelling built during these decades (Martí Nasarre de Letosa, 1994).

Figure 1. Plan of the city of Zaragoza with the location of the OSH Housing Estates



Source: Map drawn by the authors.

As a result, many of the Housing Estates did not have any essential services nearby, such as schools or shops, and therefore in many estates they decided to include them at the planning stage, normally as buildings separated from the housing blocks, except for shops, which were usually incorporated on the ground floor. An important element of these developments was the requirement to include places of worship. One of the main characteristics of the Franco Regime was its support for Catholicism as the only religion in return for the Church's support for the New Spanish State. This entailed that a great many of the new housing estates were provided with a church or parish as basic facilities for the new neighbourhoods, if there were no other churches in the immediate vicinity of the new housing blocks. For example, in the developments furthest away from the main build-up areas, lots were reserved exclusively for the construction of these new places of worship, such as the Girón Housing Estate (Figure 1, number 2), Alférez Rojas Housing Estate (Figure 1, number 7) or Balsas de Ebro Viejo Housing Estate (Figure 1, number 10).

### 3. Standardisation of the 3-bedroom Dwelling

Of the ten Housing Estates constructed in the city of Zaragoza by the OSH, only the San Jorge Estate was completed before 1954. The project was designed by the architects Alejandro Allanegui and José Yarza García in 1946, with Fausto García Marco appointed as its project manager. These three architects would become indispensable to the evolution of the city's architecture, although the partnership between Allanegui and García Marco was more associated with the other OSH projects in the city<sup>6</sup>. The work of Asís Cabrero for the OSH and José Fonseca for the INV in Madrid was essential for the other regions in the country (Delgado Orusco, 2003). Both were involved in drawing up a series of instructions to which, all development projects created under the framework of the different national housing plans constructed from 1954 had to adhere. This conditioned decision-making on design, in all the architectural, construction and urban planning aspects of the project. These standards were intended to be working guidelines for all the architects that worked for the OSH and addressed questions from the choice of site to the housing financing, and those involving the architectural project itself. As regards the design and urban planning, these guidelines tackled questions concerning the design of separate lineal housing blocks to enable a double orientation, the adjustment of alignment to the inclinations of the grounds and respect for the existing woodland, recommending the retention of any greenery. As we see in Figure 2, the Housing Estates designed in 1954 onwards were mainly lineal blocks that provide double orientation, adapting them to the terrain. The use of lineal blocks favoured the use, serialisation, and standardisation of the same kind of categories of homes<sup>7</sup>.

The Regime's Law of 1939 on the provision of family subsidies was very explicit about the kind of families that were suitable qualified to get this benefit. Its article 6 provides that "no home [would be acceptable] being incapable of housing a family with children" for receiving a Regime subsidy, and hence "the smaller homes must have three bedrooms of two beds"<sup>8</sup>.

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<sup>6</sup> Yarza García, belonged to a family of architects which had been connected to Aragón territory since the XVIII century, and was the son of José Yarza Echenique, Zaragoza municipal architect between 1911 and 1920. He was involved in projects promoted by the town council and the Zaragoza municipal housing institute, especially in the 1940s and the early 1950s. Allanegui had graduated as an architect in 1934, and García Marco, the year before, from the School of Madrid. Their first years in practice and their later professional development were both affected by the events and consequences of the Spanish Civil War. Allanegui Féliz worked for the delegated Zaragoza Ministry of Housing since its creation in 1957, and García Marco was the OSH architect for Zaragoza province.

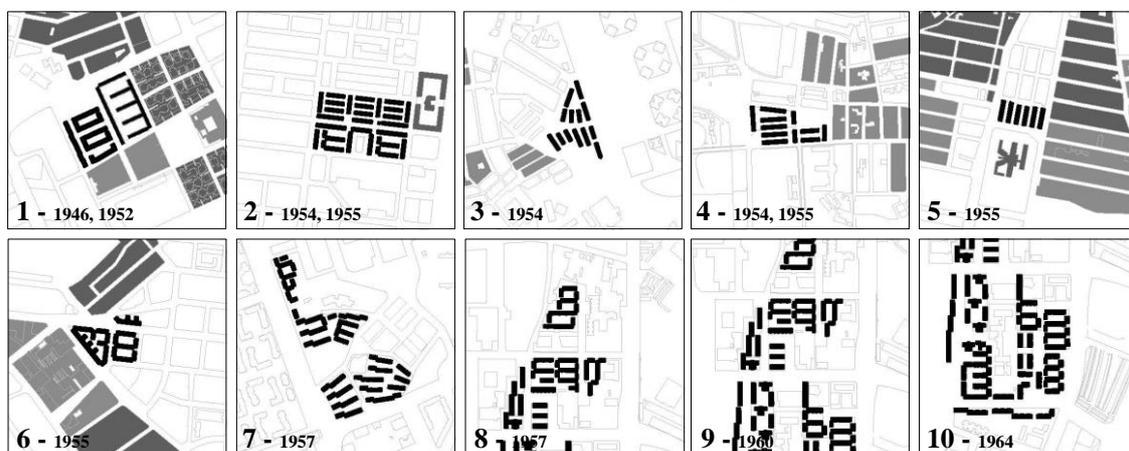
<sup>7</sup> This phenomenon also happens in other Spanish cities where the OSH built several lineal blocks of housing estates (Díez Medina and Monclús Fraga, 2020). The work of the OSH has been studied mainly in the biggest cities of Spain, such as Madrid and Barcelona (Sambrić, 2003). The case of Zaragoza has fewer studies (López-Mesa, 2018).

<sup>8</sup> Original quotation: "no se [aceptaría] ninguna vivienda que no [fuese] susceptible de albergar una familia con hijos", como susceptible de obtener una subvención por parte del Régimen, de ahí que "cuando menos, cada vivienda [debiese] tener tres dormitorios de dos camas".

This premise supposed that there was just one type of family, the Christian family —a heterosexual marriage with several children —which enjoyed the possibility of being favoured with the Regime's subsidies. The Regime, “not only aspired to lay the foundations for certain economic conditions, but also a specific social organisation in which the roles of individuals had to fit within well-defined social and cultural guidelines”<sup>9</sup> (Sarasúa and Molinero, 2009, p.312).

Franco's Regime supported traditional patriarchal gendered roles between men and women (Nash, 2013). The *Feminine Section* – the main Regime institution in charge of women's education – was “put in charge of providing a specific education to women in all aspects: cultural, religious, recreational, workwise and agewise” (Manrique and Torrero, 2008, p. 347). It transmitted a model of the ideal Spanish woman as mother and subordinated wife (Rabazas and Ramos, 2006; Manrique and Torrero, 2008)<sup>10</sup>. The law's obligation to build dwellings of at least three bedrooms is directly related to the Regime's concept of the ‘ideal woman’ that would be part of the ‘ideal family’: a husband and a wife with three or more children. The new Housing Estates with Spanish subsidies should be able to provide room for families of up to five people.

Figure 2. Planning of the OSH Housing Estates



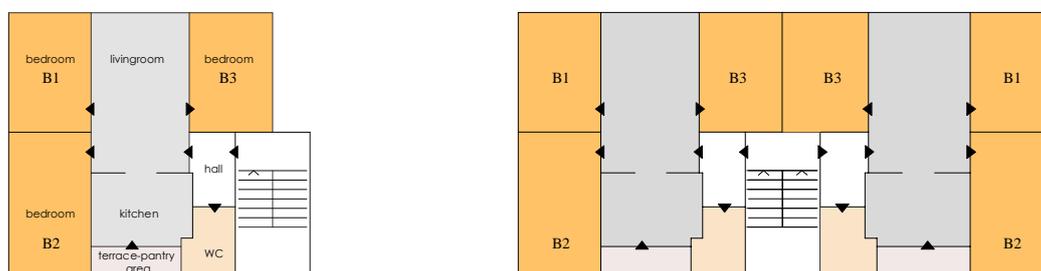
Source: Diagrams drawn by the authors.

The ten housing estates that Allanegui and García Marco designed and built between 1954 and 1964 contained a main 3-bedroom dwelling prototype that was later adjusted to conform to the requirements of each housing Category to which the residential estates had to comply. This prototype (Type A) was a dwelling where the living room and the kitchen were connected creating a cross ventilation. No floor space was allocated to corridors, so bedrooms were only accessible from the living rooms. Similarly, small kitchens and bathrooms were preferred, and often were joined to other rooms in a single space as Figure 3 shows. In all the OSH projects in Zaragoza, a design of a set of common staircases serving two dwellings was chosen, so that these sets were repeated along each block producing a clear reiteration of access points on the ground floor and voids for ventilation on higher floors (Figure 4).

<sup>9</sup> Original quotation: “no sólo aspiraba a implantar unas determinadas condiciones socioeconómicas sino también una concreta organización social en la que la función de los individuos se tenía que adecuar a unas pautas sociales y culturales bien definidas”.

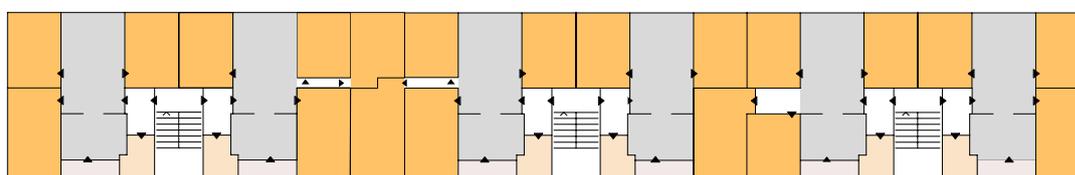
<sup>10</sup> Like all reactionary régimes, Franco's Regime made the subordination of women to men one of its basic components (ideological, political and economic), and one of its pillars. Women's roles promoted by the Regime were related to the nineteenth century Bourgeois-Catholic model that was predominant in Spain, which denied female autonomy and confined her to the domestic sphere (Sarasúa and Molinero, 2009).

Figure 3. Diagram of the 3-bedroom dwelling Type A



Source: Diagram drawn by the authors.

Figure 4. Diagram of a linear block with dwellings Type A

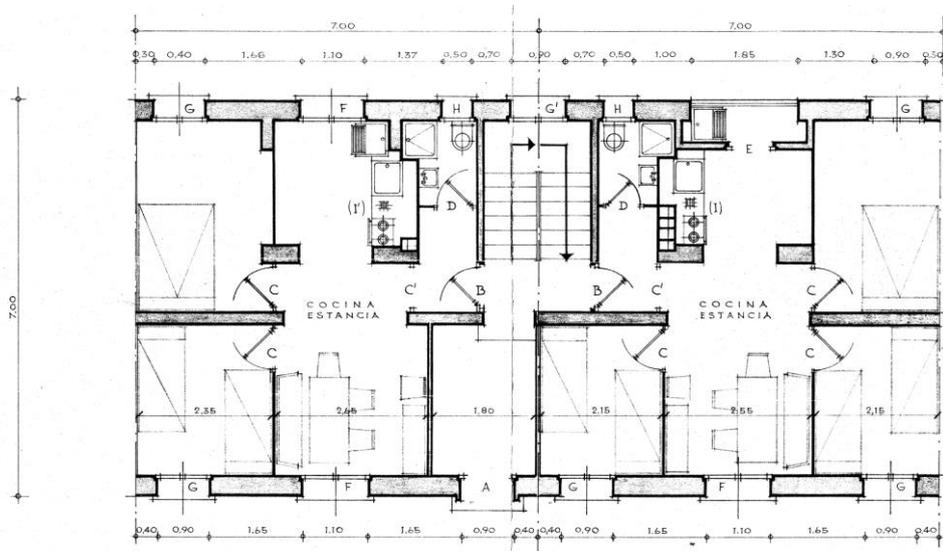


Source: Diagram drawn by the authors.

The interior distribution of the 3-bedroom dwelling Type A consists of dividing a 7.00m x 7.00m square in three bands: a central one of 2.60m and two lateral ones of 2.20m (Figure 5). The central band contains the kitchen, living room and a semi-exterior terrace-pantry area. This band generates the dwelling's cross ventilation and creates the spatial continuity between the living room and the kitchen, which is a fundamental component of the Type A. Using this base, two bedrooms were in one of the lateral bands, a small one of 6.90m<sup>2</sup>, and another larger of 8.30m<sup>2</sup>, with a third bedroom in the opposite band also smaller than 7.00m<sup>2</sup>. The fourth space corresponding to the dimensions of the larger bedroom was used for a bathroom 1.10m in width and about 2.40m<sup>2</sup> and was partly used as common space for the stairs that connect the floors. This initial plan satisfied the requirements of the law in force at the time, as the size of the homes was always less than 49 m<sup>2</sup> (Social type and 3<sup>rd</sup> Category), and the structure was easily divisible into two cross-sectional areas with load bearing walls that enable spans up to 3.50m. This distribution was thus achieved with a structure of load bearing walls for the facade of solid brick with interior lining and an intermediate band along the length of the block's line which marks the horizontal division between bedrooms and the living space in the three cross-sectional bands. However, this wall was not continuous but was interspersed with gaps of 2.50m, allowing in light through the kitchen to the living room, and creating an open space between both rooms, although it is structurally reinforced with some intruding bracing walls of around 0.7m that restrict the spatial continuity.

The Type A 7.00m x 7.00m square base predominated in the four estates constructed in 1954 (Table 4) and was used as the base model for the design of 3<sup>rd</sup> Category Homes (<54m<sup>2</sup>) in the 1<sup>st</sup> phase of the Girón Housing Estate, the 1<sup>st</sup> phase of the General Urrutia Housing Estate, and the Arzobispo Domènech Housing Estate, with a total of 944 Type A's dwellings built, of which 714 had 3 bedrooms (75%). The rest of the dwellings were variations of Type A, which provided dwellings with four or two bedrooms —128 dwelling had 4 bedrooms (14%), and 102 had 2 bedrooms (11%).

Figure 5. 3-bedroom dwelling Type A, Plans of General Urrutia Housing Estate (1954)



Source: Zaragoza Municipal Archive, 1-9-7 6640/1955.

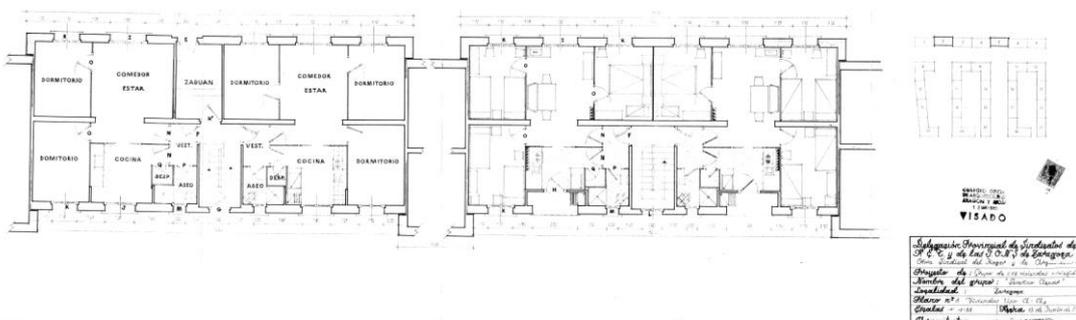
Table 4. Dwelling types and total number of homes for Estates built in 1954

Nº bedrooms	Type	Total nº of homes		
		1 <sup>st</sup> phase Girón	1 <sup>st</sup> phase General Urrutia	Arzobispo Doménech
3	Type A	296	212	206
4	Type A	62	48	18
2	Type A	42	28	32
Total		400	288	256

Source: Data acquired by the authors.

This housing type (Type A) has a similar organisation to that employed in the 2<sup>nd</sup> phase of the 1952 San Jorge Housing Estate, also designed by Allanequi and García Marco together with Yarza (Figure 6). In this previous case, the law in force was the 1939 Act. The main dwelling type unit also includes three bedrooms, although not within a square of 7.00m x 7.00m but a rectangle of 8.30m x 8.00m, which generates greater usable space. The lateral band had 2.60m (40cm more than the previous one), so the bedrooms had a slightly greater area. In this case, the central band was 3.10m, and the spatial continuity between kitchen and living room typical of this type could be broken if desired with a folding door.

Figure 6. 3-bedroom dwelling Type A in the 2<sup>nd</sup> phase of the San Jorge Housing State (1952)



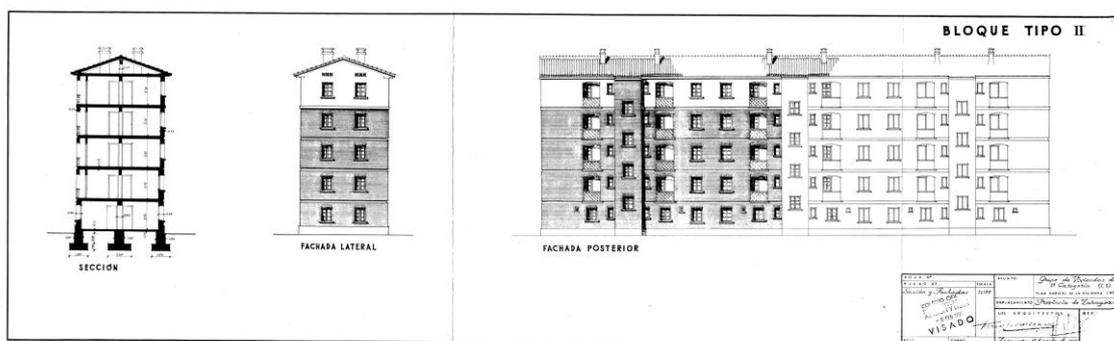
Source: Zaragoza Municipal Archive. 1-9-7 11074/1955.

The repetition and standardisation of this dwelling type combined with the use of traditional building methods resulted in the design of austere facades (Figure 7, Figure 8) in most of these housing estates. The material chosen was exposed brick, the traditional building technique of the area. This choice was related to the Regime’s promotion of the use of local materials during the autarchy<sup>11</sup>.

In general, tiles were mainly used to finish brick-built load bearing walls, which could be made in proximity to the worksite. These brick load bearing walls, placed limitations on windows enabling light access and on the height of the housing blocks, typical features of the construction of the period. In some cases, Allanegui and García Marco choose to include certain materials —such as Arabic tiled gable roofs and prominent eaves— that commemorate popular traditions.

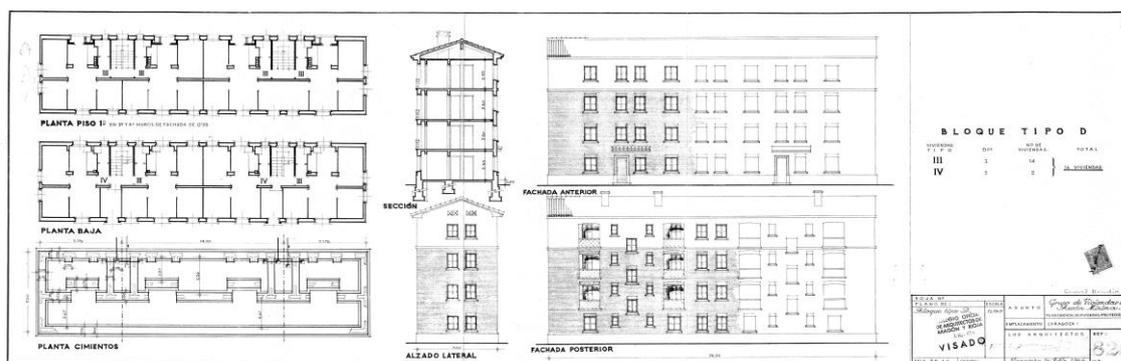
All in all, most of the housing estates were constructed with traditional and unsophisticated structural systems —essentially using load-bearing walls— causing the architecture to be labelled as ‘regionalist’ in the Spanish scene of the period (Ruiz Palomeque & Rubio del Val, 2006).

Figure 7. Elevation of Fray Julián Garcés Housing Estate (1955)



Source: Zaragoza Municipal Archive, 1-9-7 10504/1956.

Figure 8. Elevation and section of General Urrutia Housing Estate (1954)



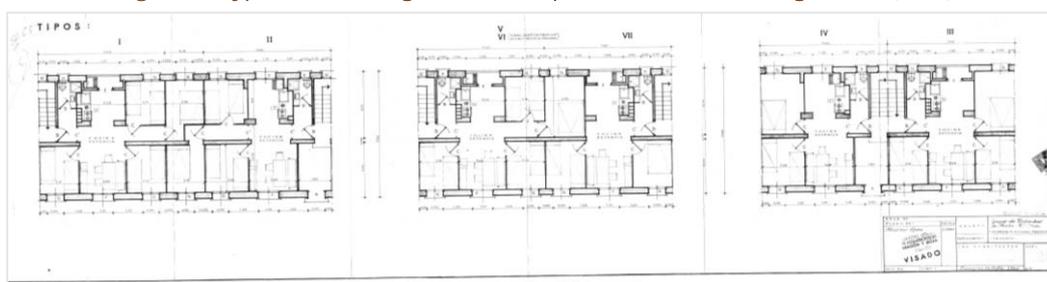
Source: Zaragoza Municipal Archive, 1-9-7 6640/1955.

<sup>11</sup> Between approximately 1939 to 1947, there arose a tendency towards the protection of the state’s economic interests against foreign competition, as a nationalist vindication of economic self-sufficiency and support for national production at any cost, or autarchy Protectionist laws were passed in 1939 with the aim of consolidating the degree of autarchy: the Law of 24 October on the protection and promotion of national industry and the Law of 24 November on the organisation and defence of industry. In addition, the Decree of 11 March 1941 on restrictions on the use of iron in building had a severe impact on building construction, which in the 1940’s forced the industry to resort to traditional building techniques.

### 3.1. Variations and Evolution of the Dwellings' Design

In a detailed analysis of the dwelling types proposed by Allanequi and García Marco in their various OSH projects, it is possible to see an attempt to systematise the various configurations of the dwellings' design. This systematisation is reflected in the estate's design based on the definitions of housing type, their repetitions, and adjustments to variations. As can be observed in the reproduction of the original plans for Arzobispo Domènech Housing Estate (Figure 9), several variations were created based on Type A. The variations relating to this housing type were based on the number of bedrooms included in each home, so that a pair of apartments with three bedrooms each sharing a stairwell could be easily changed into two dwellings of two and four bedrooms each, simply by changing access to one of the bedrooms, as we see in Figure 9. As can be observed, there were no changes in floor area to the other rooms even though the number of persons the dwelling was designed for could be greater or less.

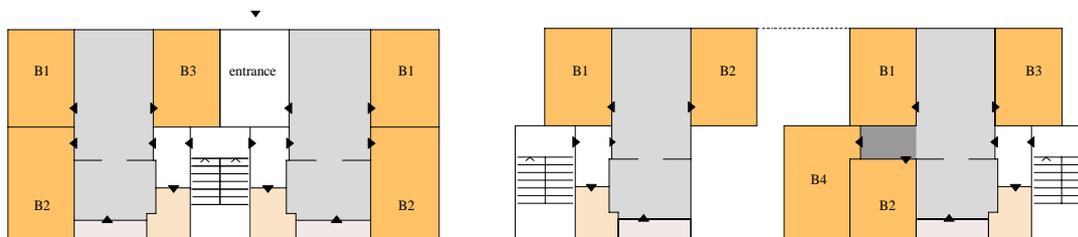
Figure 9. Types of dwellings for Arzobispo Domènech Housing Estate (1954)



Source: Zaragoza Municipal Archive, 1-9-7 6640/1955.

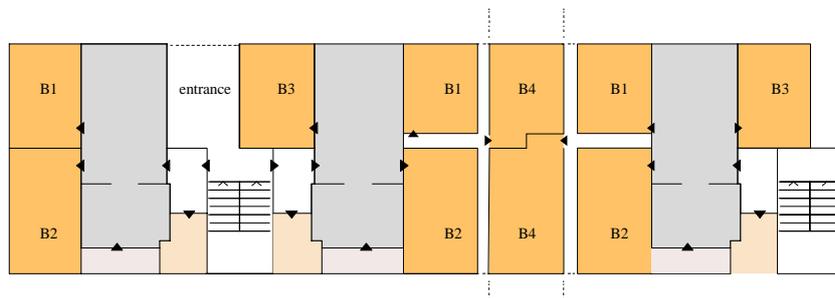
The arrangement of two- and four-bedroom dwellings was not common in these linear blocks. The majority were three-bedroom dwellings (75%) (Table 4). In some instances, the dwellings with the fewer number of bedrooms were placed on the lower floors, so that space generally allocated to a bedroom in the general plan was replaced by the entrance hallway to the block (Figure 10). In other cases, a 2.1m width band was added to a pair of the square 7.00m x 7.00m dwelling type, in order to obtain two four-bedroom homes of this model on the higher floors, or else a four-bedroom home was paired with a three-bedroom home on the ground floor, with the remaining space reserved for the entrance hallway (Figure 11). These simple variations in the floor plan configuration enabled the design of lineal blocks that were easily adapted to the estate's urban planning. In all the cases, the architects had a clear interest in creating green semi-public spaces, accessible from the outside, as can be show in Figure 1 and 2.

Figure 10. Diagrams of the variations of Type A to obtain a 2-bedroom dwelling, and a 3-bedroom dwelling and an entrance hallway (left) and a 2-bedroom dwelling, and a 4-bedroom dwelling (right)



Source: Diagrams drawn by the authors.

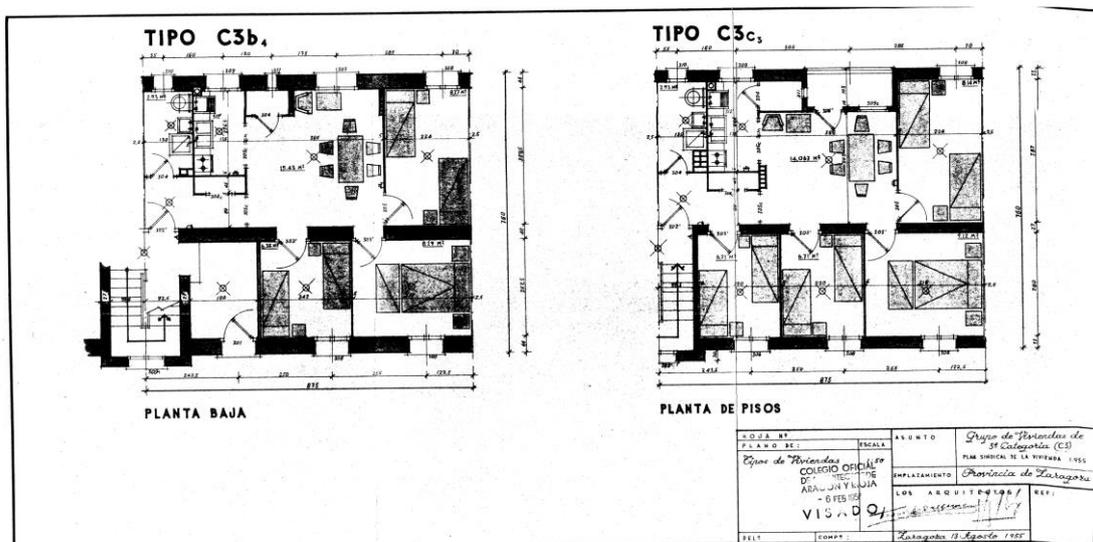
Figure 11. Diagram of the variations of Type A to obtain a two 4-bedroom dwelling adding a 2.1m band



Source: Diagrams drawn by the authors.

The developments constructed by Allanegui and García Marco in 1955, the 2<sup>nd</sup> phase of the Girón Housing Estate, the 2<sup>nd</sup> phase of the General Urrutia Housing Estate, and the Fray Julián Garcés and Casta Álvarez Estates were based on this floor configuration of 3 bedrooms, although starting from a rectangular not square model with a floor space of 7.30m x 7.60m. This abandoned the perfect systematisation of the 7.00m x 7.00m squares, and enabled the size to match the maximum 54m<sup>2</sup> established for 3<sup>rd</sup> Category Homes. A total of 494 dwellings were built according to this model in the four estates. However, the architects used these estates to try out a new housing type, this time of four bedrooms with a dimension of 7.60m x 8.75m that would eventually become more prevalent in later estates. As can be observed in Figure 12, the structural building system of the housing estates did not show significant variations. The structure still relies on load bearing walls to the facades and in the intermediate area with gaps for light less than 4.00m. The main difference between this and the previous types of three and four bedrooms is the configuration of the living area. In the four-bedroom houses, the living room and kitchen were no longer situated one in front of the other but side-by-side, creating a variation of Type A (Figure 12, *Tipo C3c3* in the original plans). In this typology the spatial continuity between both rooms were lost. A total of 126 dwellings, distributed in three of the estates in 1955 followed this model (Table 5) —in the first floor, one of the bedrooms was used for the building’s entrance, so that dwelling has three bedrooms (Figure 12, *Tipo C3b4* in the original plans).

Figure 12. 3<sup>rd</sup> Category 3-bedroom dwellings (*Tipo C3b4*) and 3<sup>rd</sup> Category 4-bedroom dwellings (*Tipo C3c3*), 2<sup>nd</sup> Phase of Girón Housing Estate (1955)



Source: Zaragoza Municipal Archive, 1-9-7 6640/1955.

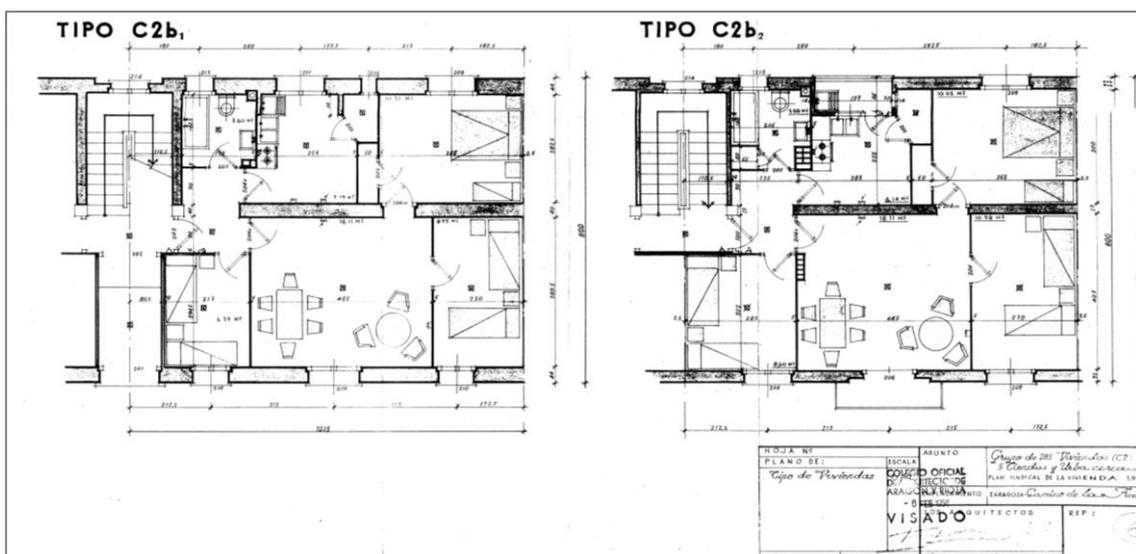
Table 5. Dwelling types and total number of homes for Estates built in 1955

N° bedrooms	Type	Total n° of homes			
		2 <sup>nd</sup> phase Girón	2 <sup>nd</sup> phase General Urrutia	Fray Julián Garcés	Casta Álvarez
3	Type A	0	0	0	204
4	Type A	0	0	0	81
3	Type A	309	41	144	0
4	Type variation A	81	9	36	0
Total		390	50	180	285

Source: Data acquired by the authors.

In the Casta Álvarez Housing Estates, the dwellings were 2<sup>nd</sup> Category (*Tipo C2b* in the original plans) and were intended for civil servants —that is the employees of Franco’s New State. In this project, 204 3-bedroom dwellings were proposed and 81 had four bedrooms. The configuration of the lineal blocks did not vary. The main change was the rectangular floor plan with spaces up to 10.20m x 8.00m for three-bedroom dwellings. With the former, the design plan was similar to the three bedrooms’ Type A, suited to cross ventilation but obstructed by the placement of a load-bearing dividing wall between kitchen and living room, as Figure 13 shows.

Figure 13. 2<sup>nd</sup> Category, 3-bedroom dwellings (Type A), Casta Álvarez Housing Estate (1955)

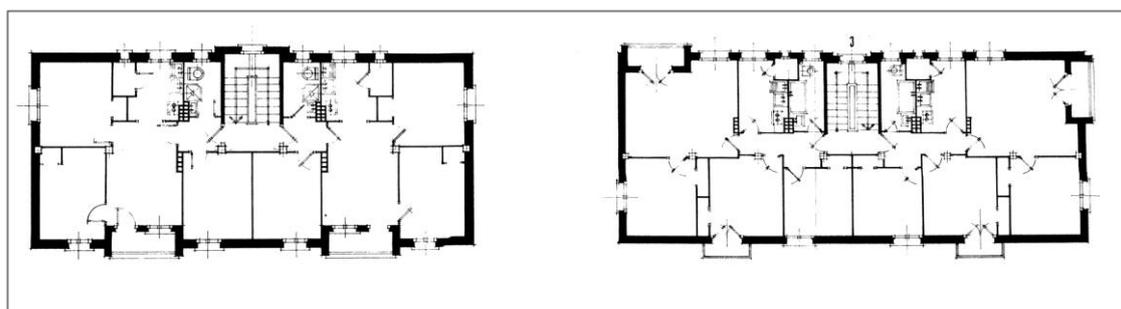


Source: Zaragoza Municipal Archive, 1-9-7 10504/1956.

In the housing estates constructed after 1957 important construction changes can be noted that, however, would not impact on the configuration and distribution of the floor plans. In the Alférez Rojas, Teniente Polanco and Ortiz de Zárate Estates, the load bearing brick walls of the facades were retained, while the central wall was replaced by pillars of reinforced concrete. The removal of the middle wall eliminated the rigidity imposed on the floor plans of these new estates; however, the opportunity to replace it with a partition wall was not used as shown in Figure 14. Despite this structural change, which might have provided greater freedom in the dwellings’ room plan, and created better conditions for cross ventilation and light penetration, the dwellings built present a similar design to the previous housing estates, continuing with the standardisation of Type A. Nevertheless, Allanegui and García Marco, designed a new dwelling type (Type B) that they combined with Type A (Figure 14).

These Housing Estates were mainly 3<sup>rd</sup> Category dwellings — Alférez Rojas Housing Estate had 452 3<sup>rd</sup> Category homes and Teniente Polanco 162 homes. In this case, the perfect square of 7.00m x 7.00m used in 1954 was lightly extended to an 8.30m x 7,20m rectangular base, which provided slightly bigger houses. The 2<sup>nd</sup> Category dwellings were 204, all of them at Alférez Rojas Housing Estate, which were based in a 10,00m x 8,20m rectangle. The 264 dwellings of Ortíz Zárate Housing Estate were Social Type (<50m<sup>2</sup>) and they were inserted in a rectangular of 7,25m x 7,10m.

Figure 14. Floor plan of Alférez Rojas Housing Estate. Type A (left) and Type B (right)

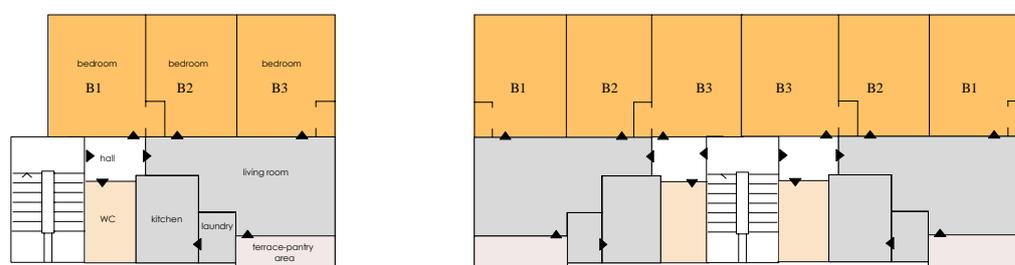


Source: Zaragoza Municipal Archive, 1-9-7 840/1960.

The new dwelling type (Type B) placed the bedrooms in a lineal band and the living room and kitchen at the front, dividing the dwelling functionally and thus generating a clear differentiation between the day and night areas (Figure 15). As we see in Table 6, for the estates built between 1957 and 1960, the dwelling type of three bedrooms continues to prevail with a total of 848 dwellings (78% of the dwellings built), although a clear increase of dwellings with four (163 dwellings, 15%) and five bedrooms (68 dwellings, 7%) can also be observed. In these estates, there were no dwellings of two bedrooms, and the Type B variations were chosen for dwellings up to three bedrooms. Following the same idea as in the Housing Estates from 1954, a 2.80m width band was added to a pair of dwelling Type B dwellings, in order to obtain two four-bedroom homes or a five-bedroom dwelling (Figure 16).

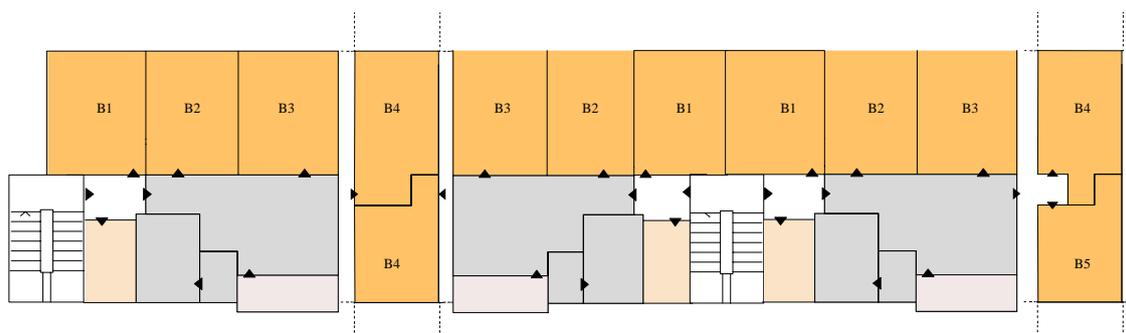
The dwelling types used in Balsas de Ebro Viejo Estate, the final residential estate constructed by OSH in 1964, which delayed its completion date until the mid-1970s, were more diverse. A total of 1,534 dwellings were built. This time, Allanegui and García Marco counted on the collaboration of the architects, Jesús Guindeo, José Luis de la Figuera y Lorenzo Monclús for the completion of the project. The architects generally took advantage of the experience gained in the design and construction of the previous estates. A total of 1,142 dwellings were built in 57 lineal blocks of five floors and a lineal block of 12 floors. In this case, all the dwellings in the lineal blocks were 3<sup>rd</sup> Category and Social Type (Table 7).

Figure 15. Diagram of the 3-bedroom-dwelling Type B



Source: Diagrams drawn by the authors.

Figure 16. Diagrams of the Variations of Type B to obtain 4-bedroom dwellings (left) and 5-bedroom dwelling (right)



Source: Diagrams drawn by the authors.

Table 6. Variations in dwelling types and total number of homes for Estates built between 1957 and 1960

Nº bedrooms	Type	Total nº of homes			
		Teniente Polanco	1 <sup>st</sup> phase Alférez Rojas	2 <sup>nd</sup> phase Alférez Rojas	Ortiz Zárate
3	Type A	32	40	42	0
4	Type A	0	0	0	0
5	Type A	0	0	0	0
3	Type B	83	334	53	264
4	Type B	29	118	16	0
5	Type B	18	50	0	0
Total		162	542	114	264

Source: Data acquired by the authors.

Table 7. Variations in dwelling types and total number of homes in Balsas de Ebro Viejo (1964)

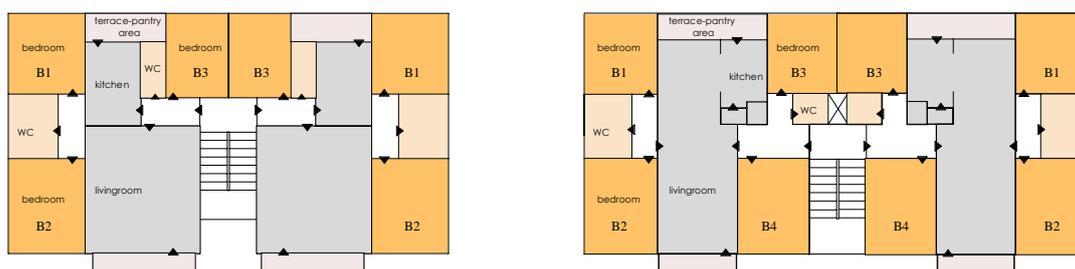
Nº bedrooms	Type	Total nº of homes	
		Category	Balsas de Ebro Viejo
3	Tower	1 <sup>st</sup> Category	20
3	Tower	2 <sup>nd</sup> Category	352
4	Tower	1 <sup>st</sup> Category	20
3	Linear Block - Type A	3 <sup>rd</sup> Category	830
4	Linear Block - Type A	3 <sup>rd</sup> Category	140
3	Linear Block - Type C3b4	Social Type	170

Source: Data acquired by the authors.

The 3<sup>rd</sup> Category homes reprised the three bands organization of Type A (Figure 17) providing cross ventilation and continuity between the living room and the kitchen. As before, the perfect square of Type A was extended, in this case to 8,65m x 7,90m rectangle for the 3 bedroom-dwellings and to 8,50m x 9,20m for the 4-bedroom dwellings, which enabled the addition of a second small bathroom and slightly bigger dimensions for the rest of the rooms. The Social Type dwelling was a variation of the type C3b4 used at Girón Housing Estate in 1955.

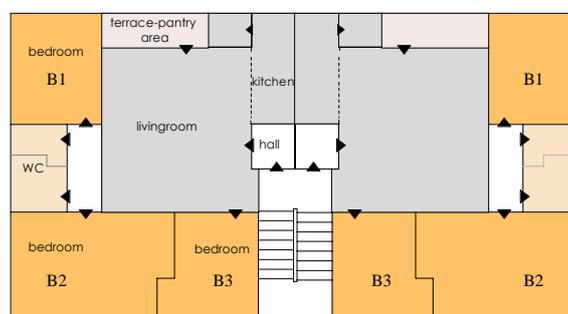
The dwelling was inserted in an 8,50m x 7,80m rectangle, where the living room had almost taken on the dimensions of a square, at the expense of the kitchen's size and creating two hall areas, one accessing the living room from the common area of the stairs and another corridor to two of the three bedrooms and the dwelling type's bathroom and shower (Figure 18). The structure of these linear blocks was comprised of supporting pillars of reinforced concrete. However, the variations of the dwelling types still failed to exploit the possibilities of freeing the floor plan, adhering to a rigid segmentation of space by having to accommodate three or four bedrooms (Figure 19). Therefore, the overall possibilities of the double orientation remained unexploited and access to one of the main bedrooms was still through the living room.

Figure 17. Diagrams of the 3-bedroom-dwelling (left) and 4-bedroom dwelling (right)  
Variation of Type A, Balsas de Ebro Viejo Housing Estate (1964)



Source: Diagrams drawn by the authors

Figure 18. Diagram of the 3-bedroom-dwelling Variation of Type C3b4,  
Balsas de Ebro Viejo Housing Estate (1964)



Source: Diagrams drawn by the authors.

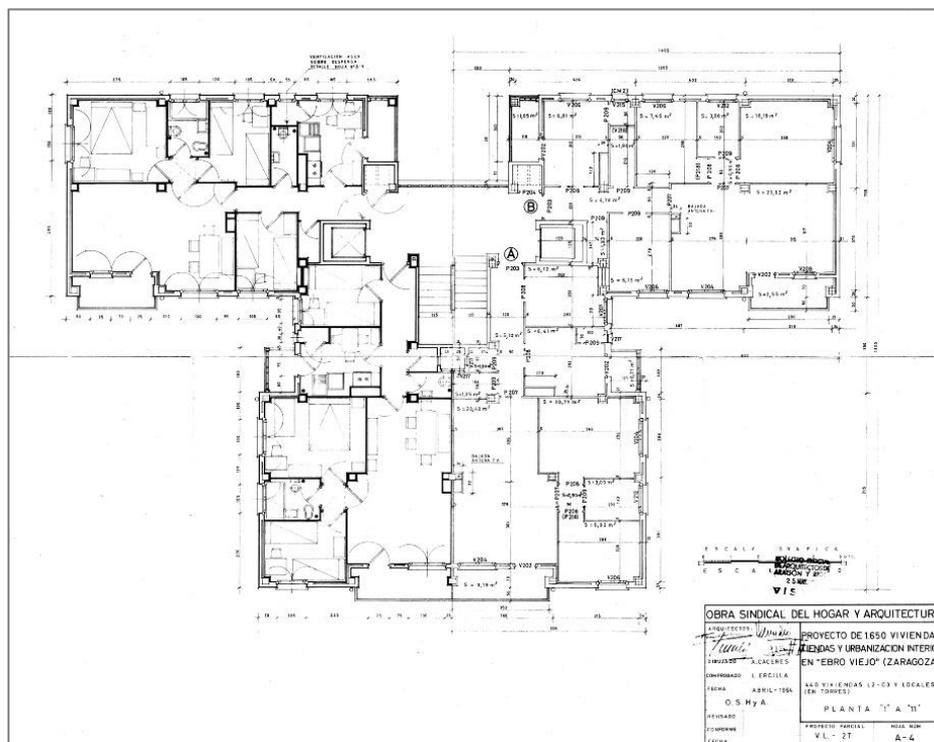
The remaining dwellings were built in a total of 10 T shaped towers of 12 stories, which permitted 3 dwellings to each floor with a single staircase. In addition, 14 single story buildings were constructed to provide service facilities, such as a school, a centre of worship, a market, various local shops, garages, a trade union centre, and pharmacy. The main innovation of the residential estate was that the towers were built using an iron frame, which opened possibilities of designing more flexible floor plans, which however were unrealised. The same clear, internal, spatial distribution was maintained with the aim of complying with the legislation in force and creating dwelling of three or four bedrooms. As can be observed in Figure 20, corridors were designed to access the bedrooms, the kitchen, and the living room. Yet, in this instance, even the spatial contiguity between kitchen and living room was lost, privileging the spatial segregation of the whole dwelling.

Figure 19. 3-bedroom-dwelling type in Balsas de Ebro Viejo Housing Estate, Lineal Block (1964)



Source: Zaragoza Municipal Archive, 1-9-7 24636/1967.

Figure 20. 3-bedroom Housing Type Balsas de Ebro Viejo Estate, T Shaped Towers (1964)



Source: Zaragoza Municipal Archive, 1-9-7 24636/1967.

## 4. Conclusion

The OSH was one of the Franco Regime's most relevant institutions to meet the housing demand of the city of Zaragoza in the 1950s and 1960s. The number of dwellings built in ten years reached almost five thousand, thus offering hundreds of families the possibility of having a decent home to live in. The data shown throughout this article show that this housing supply mainly prioritised the construction of 2<sup>nd</sup> and 3<sup>rd</sup> Category dwellings. The fact of not incentivising the construction of first category dwellings meant that these housing estates mainly provided accommodation for families with few economical resources, thus creating a differentiation by social class that moved the poorest families to the outskirts of the city. This fact contributed to maintaining a social and urban classification of the population, leaving the centre of the city for families with greater resources and transporting the working classes to the periphery. Although from the perspective of urban planning, most of these housing estates proposed lineal blocks with double orientation and large green spaces in between, their peripheral location contributed to the creation of urban inequality for their tenants.

The architects Allanegui and García Marcos chose to systematise their architectural designs. The standardisation of the 3-bedroom dwelling typologies prevailed in all the housing estates, built in such a way that similar urban and architectural solutions were offered in the estates' various locations. The fact that the Regime's legislation prioritised subsidies to dwellings of three bedrooms drives this decision. However, it resulted in the construction of small-size dwellings with minimal rooms and living areas for the dwellings of 2<sup>nd</sup> and 3<sup>rd</sup> Categories — by denying the expression of modern values in Allanegui and García Marco's dwelling designs, such as spatial continuity, liberated floor spaces and functional flexibility. The analysis of the OSH Housing Estates dwellings' design underlines that the gradual improvement in structural building techniques that could be seen in the various estates was not reflected in the interior design. The typologies used in the housing estates since the 1950s onwards were used systematically but with variations, with only slight changes to the dimensions of the different rooms —except for the last housing estate, Balsas de Ebro Viejo, which was the only one that offered more diversity of types and blocks, building first category dwelling and high-rise towers as well as linear blocks with 2<sup>nd</sup> and 3<sup>rd</sup> Categories dwellings.

## Acknowledges

Acknowledges to the Architecture Archive of the City Council of Zaragoza for the possibility to get a reproduction of the original projects studied for this article.

This article is the result of the Research Project BIA2013-44001-R (Ministry of Economy and Competitiveness of the Spanish Government), and the Research Group GIA T37\_17R (Government of Aragon, Spain).

## Authorship

The first author realized the conceptualization of the manuscript, its historical contextualization, and its writing and editing, the second author realized the research and archive work, and the third author developed the analysis of the different Housing States.

**Conflict of interest:** The authors declare no conflict of interest.

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