SEVEN
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METHODOLOGY FOR THE ARCHITECTURAL DESIGN OF A SOCIAL ASSISTANCE CENTER

METODOLOGIA PARA O PROJETO ARQUITETÔNICO DE UM CENTRO DE ASSISTÊNCIA SOCIAL

METODOLOGÍA PARA EL DISEÑO ARQUITECTÓNICO DE UN CENTRO DE ASISTENCIA SOCIAL

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ABSTRACT

Urban facilities are the set of buildings and installations that house services aimed at meeting the basic needs of a population. They are architectural complexes designed and built in the fields of health, education, commerce, administrative and financial activities, security, recreational activities, social assistance, among others. The architectural projection of urban facilities requires the integration of a methodology that considers the social context, emerging issues, environmental conditions, and other elements, which results in a good architectural project and the evolution of the traditional way of integrating spatial design. In the academic training context, seventh-semester students (class of 2024A) of the Design Engineering program at the Technological University of the Mixteca, through the course Architectural Project II and guided by the course's main instructor and first author of this article, developed a Methodology for the Design of a Social Assistance Center. This center was planned for a medium-sized city (Huajuapan de León, Oaxaca – 75,000 inhabitants), integrating nine architectural design proposals for Social Assistance Centers, considering the basic and emerging needs of the various social groups to be served, and incorporating design aspects such as the natural and built environment, architectural style, and design concept, linking and reinforcing it with the creative diversity of each working team.

Keywords: Methodology. Design. Process. Architecture.

RESUMO

O equipamento urbano é o conjunto de edifícios e instalações que abrigam os serviços destinados ao atendimento das necessidades básicas de uma população; são complexos arquitetônicos projetados e construídos nos âmbitos da saúde, educação, comércio, atividades administrativas e financeiras, segurança, atividades recreativas, assistência social, entre outros. A projeção arquitetônica do equipamento urbano requer a integração de uma metodologia que considere o contexto social, a problemática emergente, as condições ambientais, entre outros fatores, o que possibilita a elaboração de um bom projeto arquitetônico e a evolução da forma tradicional de integrar o design espacial. No âmbito da formação acadêmica, os alunos do sétimo semestre (geração 2024A) do curso de

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Engenharia em Design da Universidade Tecnológica da Mixteca, por meio da disciplina Projeto Arquitetônico II e orientados pela professora responsável pela disciplina e primeira autora deste artigo, desenvolveram uma Metodologia para o Design de um Centro de Assistência Social. O centro foi planejado para uma cidade de médio porte (Huajuapan de León, Oaxaca – 75.000 habitantes), integrando nove propostas de design arquitetônico de Centros de Assistência Social, considerando as necessidades básicas e emergentes dos diferentes grupos sociais a serem atendidos e contemplando aspectos do design como o meio físico natural e artificial, o estilo arquitetônico e o conceito de design, vinculando e fortalecendo esses elementos com a diversidade criativa de cada equipe de trabalho.

Palavras-chave: Metodologia. Design. Processo. Arquitetura.

RESUMEN

El equipamiento urbano es el conjunto de edificios e instalaciones en las que se albergan los servicios para la atención de las necesidades básicas de una población, son complejos arquitectónicos que se diseñan y construyen en el ámbito de la salud, la educación, el comercio, las actividades administrativas y financieras, la seguridad, las actividades recreativas, la atención social, entre otras. La proyección arquitectónica del equipamiento urbano requiere de la integración de una metodología en la cual se considere el contexto social, la problemática emergente, las condiciones medio ambientales, entre otros, lo cual genera un buen proyecto arquitectónico y la evolución en la tradicional forma de integrar el diseño espacial. En el ámbito de la formación académica los alumnos de la carrera de Ingeniería en Diseño de la Universidad Tecnológica de la Mixteca de séptimo semestre generación 2024A, a través de la materia de Proyecto Arquitectónico II y guiados por la profesora titular de la materia y primera autora del presente artículo, conformaron una Metodología para el diseño de un Centro de Asistencia Social, el cual fue emplazado en una ciudad de tamaño medio (Huajuapan de león, Oaxaca - 75,000 hab), integrando nueve propuestas de diseño arquitectónico de Centros de Asistencia Social considerando las necesidades básicas y emergentes de los diversos grupos sociales a atender y contemplando ámbitos del diseño como el medio físico natural y artificial, el estilo arquitectónico y el concepto de diseño, vinculándolo y fortaleciéndolo con la diversidad creativa de cada equipo de trabajo.

Palabras clave: Metodología. Diseño. Proceso. Arquitectura.

1 INTRODUCTION

The twenty-first century is present in the architectural design of urban equipment, considering it as a process that seeks to homogenize society, allowing the satisfaction of individual needs, but allowing architectural design to be made of universal knowledge and appropriation, attending to particular needs without ceasing to meet the needs of the system.

Urban equipment is the set of buildings and facilities in which activities and services are housed to meet the basic needs of the rural and/or urban population, they are architectural complexes that are designed and built in the field of health, education, commerce, administrative and financial activities, security, recreational activities, social care, among others.

The architectural projection of urban equipment requires the application of a methodology in which the analysis of the urban context, the social context, the emerging problems and environmental conditions, among others, is considered, which brings with it the integration of a good result and the evolution in the traditional way of integrating architectural projects.

In the field of the academic training of Design Engineers, a Methodology was formed for the realization of the architectural project of a Social Assistance Center, which became a systemic work that instructed future designers in the analysis of the geographical context in a medium-sized city (75,000 inhabitants), in the consideration of the basic and emerging needs of the various social groups to be served and in the application of the of design areas such as the natural and artificial physical environment, the architectural style and the design concept, linking and strengthening with the creative diversity of each work team.

The consideration of the natural and artificial physical environment is a field of study that has been evolving in the design of architectural space, with increasing presence in the different stages of the methodology, however it has been a challenge for design professionals to stop considering it as a trend and induce it as a fundamental part of the methodology for the design of any architectural complex. which must satisfy the needs of the environment of a demanding society. Sánchez-Platas, L., Sánchez-Luqueño, J. (2016)

One of the fundamental aspects when addressing a Methodology for the design of the architectural space is the consideration of the Social Framework of the Architectural Framework, a situation that instructed the students of the architectural project to strengthen the processes of social research through observation, surveys, questionnaires and interviews, allowing the identification of the latent social problem, recognizing the different

target groups to be served, the diversity of needs, varieties, ages, genders, requirements, services and care among many others. Sánchez Platas, L. E, Hernández García, A. S., Sánchez Luqueño, J., Velarde Galván, A., Cruz Martínez, V. M. (2019)

Social inclusion is present in the design of an Assistance Center, also aiming to enhance the skill, opportunity and dignity of people who are disadvantaged due to their situation as users of the Center. An example of social inclusion was the consideration of the various target groups or users in the design and integration of a Social Assistance Center (migrants, people with addiction problems, alcoholics, people in street situations, people who have been abused, displaced persons, etc.).

Architectural projects such as a Social Assistance Center contemplate, in addition to the spaces that allow them to satisfy the basic needs of users, a research commitment for designers to identify the complementary needs of the various by target group.

The popular economy is a variable that is directly linked to social inclusion and that is indirectly linked to the architectural design of a Social Assistance Center, since it allowed considering the housing needs and overnight stays of various merchants in transit, which are frequent in medium-sized cities, who travel from distant towns and ranches to sell their products in municipal and/or district capitals and at least having relatives or not having the economic solvency and not intending to spend the little profit from the sale of their products, they do not rent lodging, causing them to spend the night in parks, gardens and portals, having to take care of their companions, their merchandise and themselves, enduring the inclement weather, in addition to the discomfort of the place.

For this reason, the process of designing an architectural project such as a Social Assistance Center made it possible to configure a methodology that involves new stages of study and research, systemic analysis, various areas of study of architecture, social studies, attention to basic housing aspects, attention to complementary aspects of populations in transit and variables typical of a dynamic society. allowing the generation of nine architectural preliminary projects as a result of the work of the students of Design Engineering, advised by the first author of this article, who addressed various problems seeking to improve the conditions of urban equipment for social welfare.

2 MATERIALS AND METHODS

The students of the Design Engineering career of the Technological University of the Mixteca of the seventh semester generation 2024A, through the subject of Architectural

Project II and guided by the professor of the subject and first author of this article, formed a Methodology for the design of a Social Assistance Center, which was located in a medium-sized city (Huajuapan de León, Oaxaca - 75,000 inhabitants), integrating nine architectural design proposals for Social Assistance Centers that meet the needs of various groups of users and link areas of design study.

One of the first stages of the process for the design of the Social Assistance Center is to integrate a correlation matrix of similar projects, which is a tool that allows evaluating the linear relationship of two variables, in addition to strengthening the bases of the architectural project to be conceived later. Hernández García, A. S. (2019)

The Correlation Matrix of Similar Projects (Table 1) is integrated from the identification and review of architectural projects similar to the project to be developed, conceived at the national and international level, indicating through a symbol the absence or presence of the list of spaces, a list that arises from the same similar projects. The matrix is organized simultaneously, zoning the spaces and hierarchizing the spaces based on the most recurrent. This also allows the value of the less recurrent spaces for the project to be conceived to be analyzed. The projects with the largest number of spaces and areas are identified and finally the program of needs of the project to be generated is based. Plazola Cisneros, A. (1992b).

Table 1

Correlation matrix of similar projects

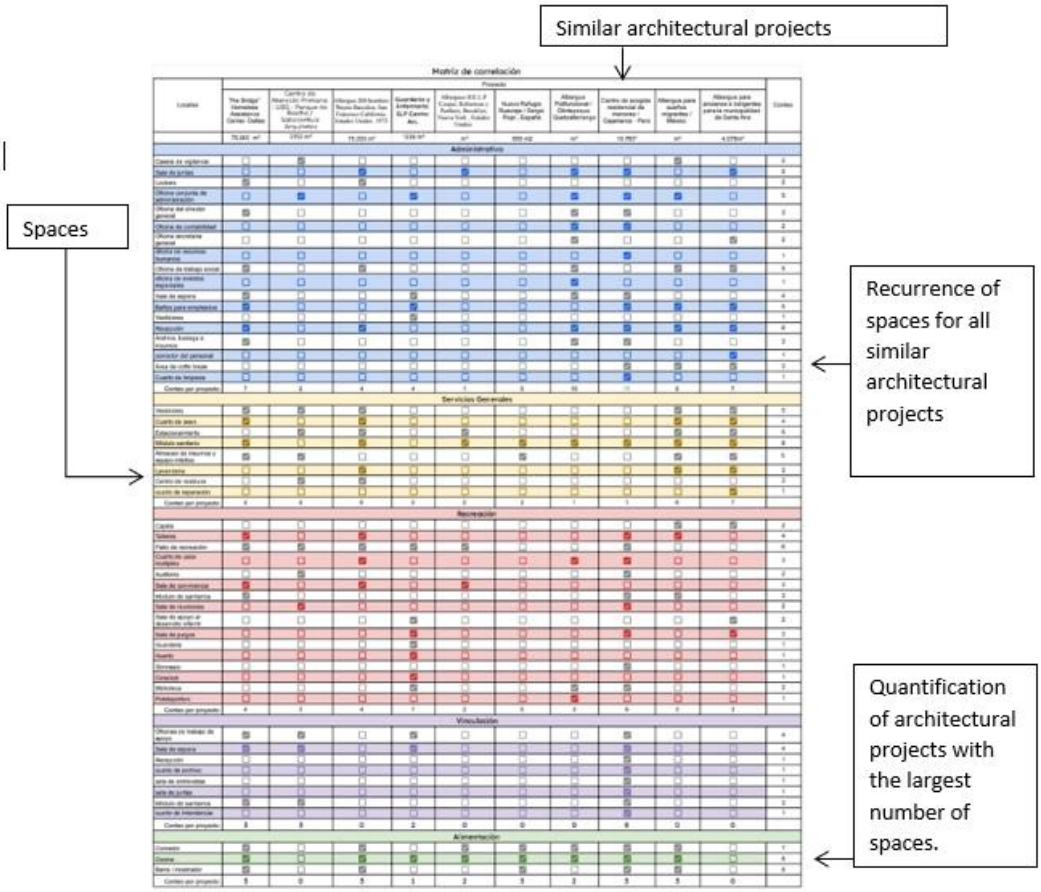


Table I. The Correlation Matrix of Similar Projects is presented in a column format, identifying the zoning through a color code and considering a last column to quantify the recurrence of spaces for all similar architectural projects.

Another of the fundamental stages in the process of designing a Social Assistance Center was the integration of a Program of Needs (Table 2), which is an analysis and synthesis of the basic needs to be met and the specific activities of the various users of the architectural complex, which will determine in each row the architectural space that will allow the need to be satisfied. the activities and outline the required furniture. It is important to note that one of the particular contributions of the methodology is the evaluation and confirmation of the zoning in the needs program (based on the correlation matrix of similar projects), which optimizes the subsequent stages. Plazola Cisneros, A. (1992a).

Table 2

Program of Needs

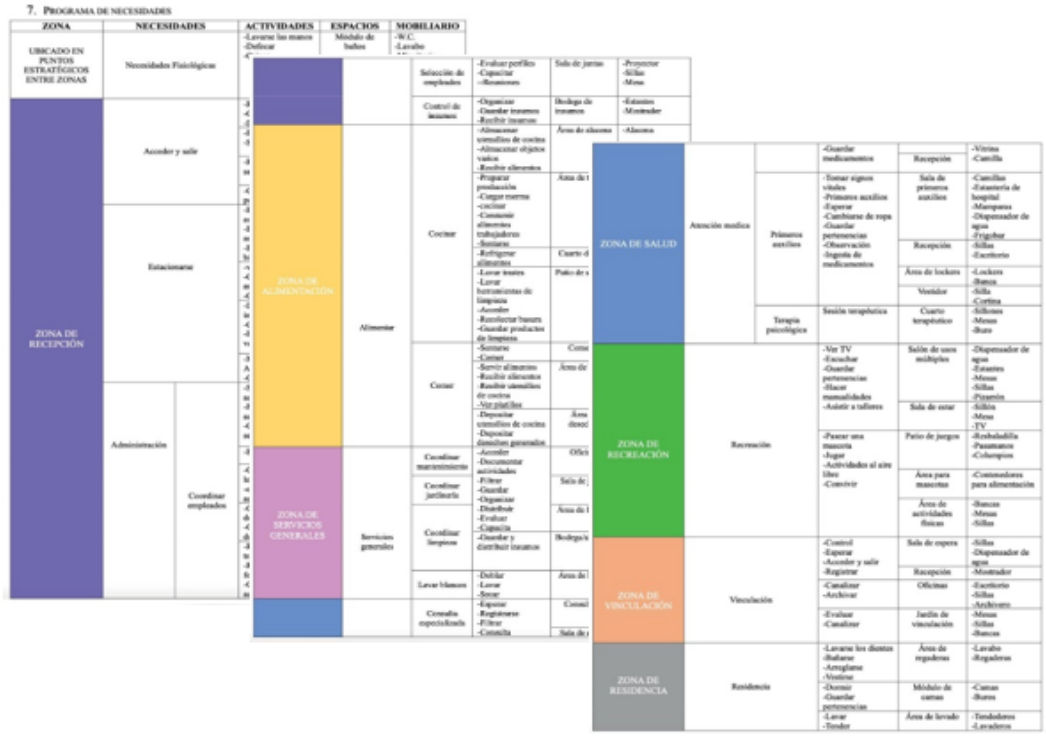


Table II. The Program of Needs is presented in a column format establishing the main need, the secondary activity(s), the space, the furniture and using a color code by area which is recommended to be maintained as an element of identification throughout the methodology.

Another key stage in the design process of the Social Assistance Center was the Architectural Program (Table 3), which quantifies each of the spaces of the architectural complex by square meters (m2), by zones and consequently allows determining the total m2 of the architectural complex, it is important to note that this phase of the design process is based on the stages prior to the project: research, review of user activities, user organization chart, study of minimum areas, etc. Plazola Cisneros, A. (1992a).

Table 3

Architectural Program

ZONA	ESPACIOS	M²			M² Zona
Acceso	Recepción/ Sala de espera	31 m2			41 m2
	Área de lockers	10 m2			
Administrativa	Oficina de contabilidad	12 m2			84.33 m2
	Oficina recursos humanos	12 m2			
	Cuarto de archivos	10.4 m2			
	Administración	12 m2			
	Módulo de baño	Hombres 20.83 m2	Mujeres 17.1 m2	Inclusivo 20.83 m2	
Comunitaria	2 Terraza	12 m2			64 m2
	Biblioteca	12 m2			
	2 Aulas de usos múltiples	80 m2			
Alimentación	Cocina	25 m²			104.2 m2
	Comedor	70.20 m²			
	Bodega	9 m²			
Servicios generales	Oficina de personal de seguridad	12 m²			111.25 m2
	Oficina de gerente de servicios generales	12 m²			
	Oficina de gerente limpieza	12 m²			
	Cubículo de administrador de lavandería	8.25 m2			
	Bodega/almacén	49 m²			
	Cuarto de lavado	18 m²			
Atención medica	Área de camillas	30.4 m²			122.415 m2
	Recepción / Sala de espera	31 m²			
	Consultorio de primeros auxilios	18.92 m²			
	Consultorio de atención medica	18.92 m²			
	Consultorio de psicología	18.92 m²			
	Baño completo	4.255			
	Terraza	63 m2			
Vinculación y canalización	3 Oficina	36 m2			61.54 m2
	Terraza	26.68 m2			
	Módulo de baño	Hombres 20.83 m2	Mujeres 17.1 m2	Inclusivo 20.83 m2	
Residencial	3 Dormitorios	271.2 m2			364.84 m2
	Área de lavado/ Tendido	30.6 m2			
	Módulo Sanitario/Regaderas/Vestidores	Mujeres 37.53 m2	Hombres 41.11 m2	Inclusivo 41.11 m2	
Religiosa	Santuario	16 m2			16 m2
Carga y descarga	Caseta de vigilancia con módulo sanitario	6.25 m2			6.24 m2
Total, de metros cuadrados					**1015.815 m2**

Table III. The Architectural Program is integrated by a format of columns and color coding that allows the information to be organized and effectively prepared for subsequent stages.

Another of the indispensable stages of the architectural design process of the Social Assistance Center and which is generally not considered in the traditional methodologies of design of the architectural space is the Analysis of the Physical Environment which is subdivided into Natural and Artificial and its radius of action is at the district level and/or at the city level. both analyses allow us to evaluate the characteristics of the natural and urban context in which the architectural complex will be located (Table 4).

In the first instance, and with the support of the Correlation Matrix tool, the parameters that will make it possible to evaluate the most pertinent characteristics of the natural and artificial physical environment in which the project will be located are integrated, through a descriptive value scale and evaluation process, it was possible to determine the optimal

property in the field of the natural and artificial physical environment for the Social Assistance Center (Table 4).

Table 4

Correlation matrix for the evaluation of the natural and artificial physical environment.

4.- Evaluación y selección de predio

Predio 1 colonia Fidepal

Parámetros	Ponderación 3	2	1
Potencial desarrollo urbano (casas y comercios)	Alto Potencial	Medio Potencial	Lento Potencial
Pendiente	2% a 10%	15% a 25%	30% a más
Proximidad al centro de Huajuapan	0 a 2 km	2 a 5 km	5 km o más
Accesibilidad vehicular	Fácil acceso	Mediana accesibilidad	Inaccesible
Servicios • Agua potable • Energía eléctrica • Drenaje	3 servicios	2 servicios	1 servicios
Calidad de suelo (Densidad aparente)	Suelo mixto	Suelo rocoso	Suelo fértil
Nivel de seguridad de la ubicación de la propiedad (Cuenta con: -Casetas de vigilancia - Rondines)	2 servicios	1 servicio	Ninguno
Contaminación (olfativa y ambiental)	Ningún tipo	1 tipo	2 tipos
Forma del predio	Regular	Irregular	Complejo
Orientación (asoleamiento y vientos)	Favorable	Medio favorable	No favorable
Posibles inundaciones	Baja o nula probabilidad de inundaciones	Mediana probabilidad de inundaciones	Propenso a inundaciones
Permite el aprovechamiento del paisaje	Permite el aprovechamiento del paisaje	Paisaje limitado	Nulo paisaje
Pavimento	Vialidad de concreto / asfalto		Terracería
Total	28		

Predio 2 Fraccionamiento Jardines del sur

Parámetros	Ponderación 3	2	1
Potencial desarrollo urbano (casas y comercios)	Alto Potencial	Medio Potencial	Lento Potencial
Pendiente	2% a 10%	15% a 25%	30% a más
Proximidad al centro de Huajuapan	0 a 2 km	2 a 5 km	5 km o más
Accesibilidad vehicular	Fácil acceso	Mediana accesibilidad	Inaccesible
Servicios • Agua potable • Energía eléctrica • Drenaje	3 servicios	2 servicios	1 servicios
Calidad de suelo (Densidad aparente)	Suelo mixto	Suelo rocoso	Suelo fértil
Nivel de seguridad de la ubicación de la propiedad (Cuenta con: -Casetas de vigilancia - Rondines)	2 servicios	1 servicio	Ninguno
Contaminación (olfativa y ambiental)	Ningún tipo	1 tipo	2 tipos
Forma del predio	Regular	Irregular	Complejo
Orientación (asoleamiento y vientos)	Favorable	Medio favorable	No favorable
Posibles inundaciones	Baja o nula probabilidad de inundaciones	Mediana probabilidad de inundaciones	Propenso a inundaciones
Paisaje	Permite el aprovechamiento del paisaje	Paisaje limitado	Nulo paisaje
Pavimento	Vialidad de concreto / asfalto		Terracería
Total	30		

Table IV. The correlation matrix for the evaluation of the natural and artificial physical environment of x number of available properties can be carried out jointly or separately, through a first column the parameters that will evaluate the potential of the site area are listed, which on this occasion were determined by the type of architectural complex, The rest of the columns are a description of the weighting from the value scale for each parameter.

Subsequently, an analysis of the property with the highest score as a result of the evaluation of properties is carried out (fig. 1), allowing to identify and illustrate its orientation, the path of the prevailing winds, the exposure and trajectory of the sun, accessibility, road hierarchy, the physiographic conditions near the property, the immediate urban equipment and everything that characterizes it. Cabeza Pérez, A. (1993)

This process aims at the correct orientation and location of the architectural complex on the property, prior to the architectural match and not before, since the definition of the property for new projects does not present any contribution to the design process in the initial stage because there is no knowledge of the need for m2 required for the complex, one of the main strengths of an architectural project for urban equipment is the possibility of locating it anywhere, considering at the time of a new location a thorough analysis of the physical environment to comply with the conditions of orientation and location, among others.

This methodology has academic objectives, offering the student the tools to analyze step by step the integration of a logical and orderly process to reach a solution that is consolidated consecutively until reaching an efficient architectural complex.

Figure 1

The analysis of the Physical Environment is carried out at the site level and at the neighborhood or neighborhood level, even using the information and tools available on the Internet

This phase of Analysis of the Physical Environment is another contribution to the traditional methodology of architectural design, which is integrated by the identification of the parameters of the natural and artificial physical environment at the site, neighborhood and/or city level, allowing the evaluation of the location of the architectural complex in particular through the correlation matrix. the determination of the value scale, the description of the parameters of the value scale, the evaluation matrix, as well as the analysis of the property at the site level.

One of the last stages of the methodology prior to the architectural match is the determination of the design concept, it is the identification of one or more elements that allow the designer to be inspired in the architectural composition of the architectural complex, guiding him in the most general aspects of the project in order to geometrize it and make it the basis of an architectural project. Jiménez Barriga, N. (2021)

The conceptualization of architectural design can apply the analogical, canonical, iconic and/or pragmatic method.

Figure 2

An architectural project based on analogue conceptualisation takes up a natural element to design and distribute its areas and spaces, inspired by an element perfected by nature over thousands of years, taking advantage of the search for perfect harmony

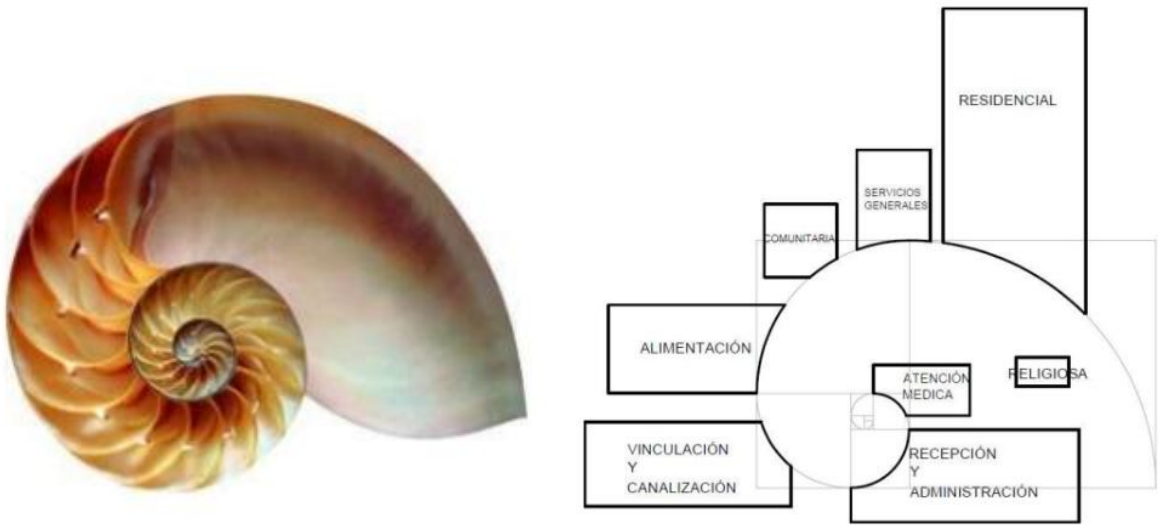
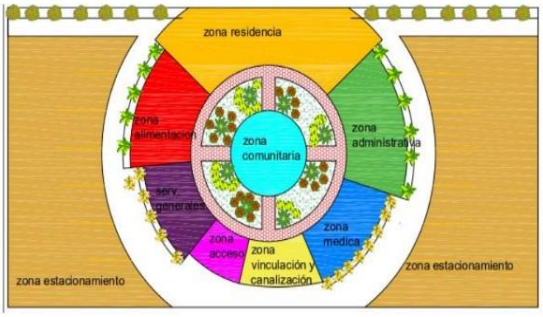
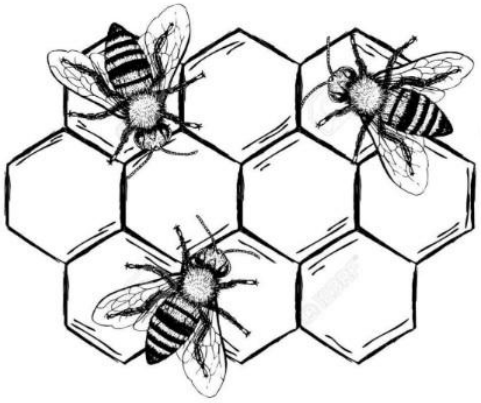


Figure 3

An architectural project based on analogical conceptualization can also take up an element built by man to abstract, geometrize and distribute an architectural project, inspired by an architectural composition recognized throughout history for its unity and balance





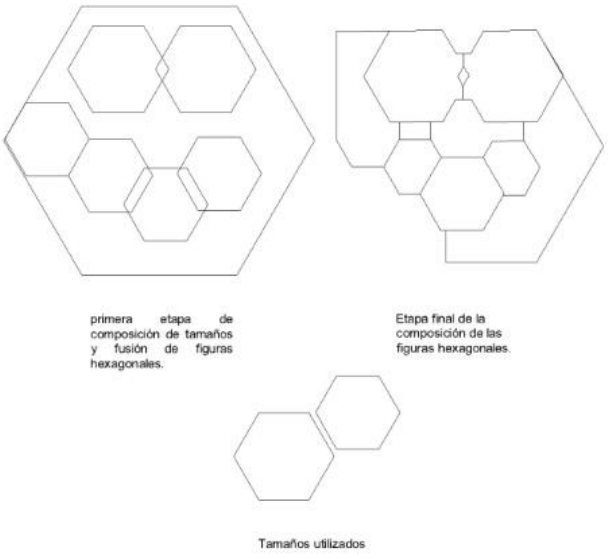
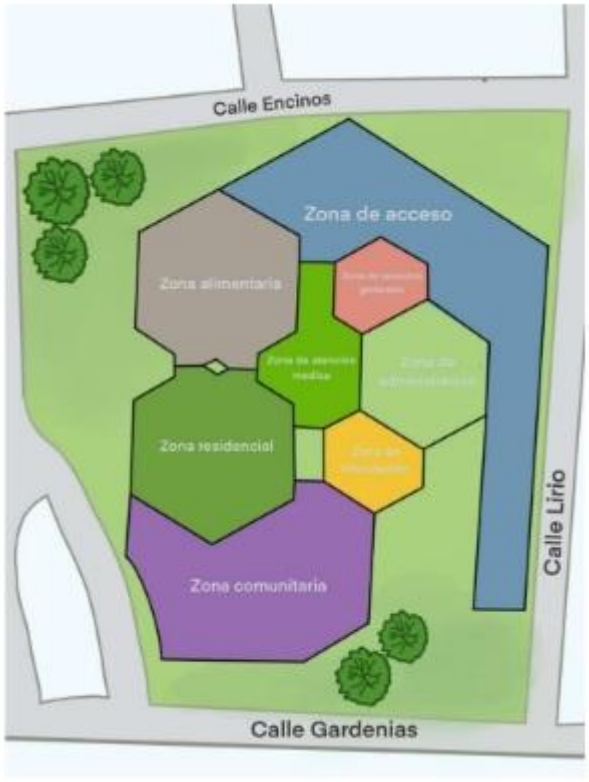


Figure 4

An architectural project based on analogical conceptualization takes up a natural element to project and distribute an architectural project, it is a guide that through its abstraction and total or partial geometrization gives guidelines to the integration of zones, inserting corridors, gardens and open-air spaces to link a functional architectural complex

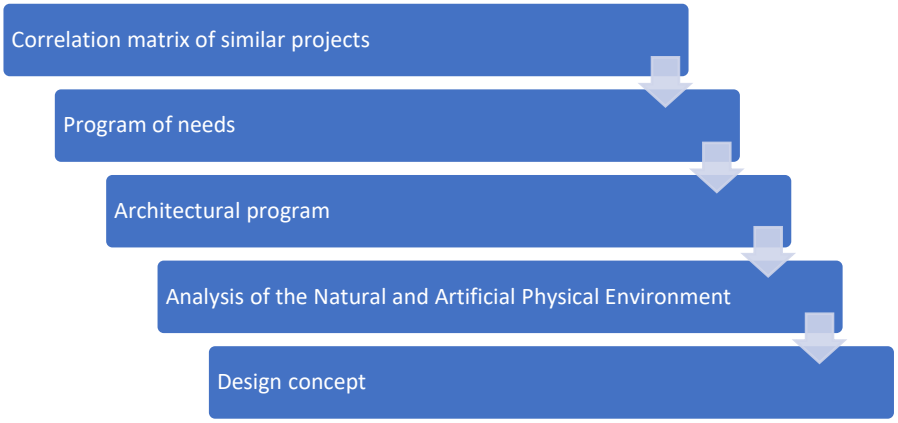


3 RESULTS

The methodology for the architectural design of a Social Assistance Center includes among its main phases:

Figure 5

The five phases presented are a guideline for implementing them in the methodology of any other architectural project

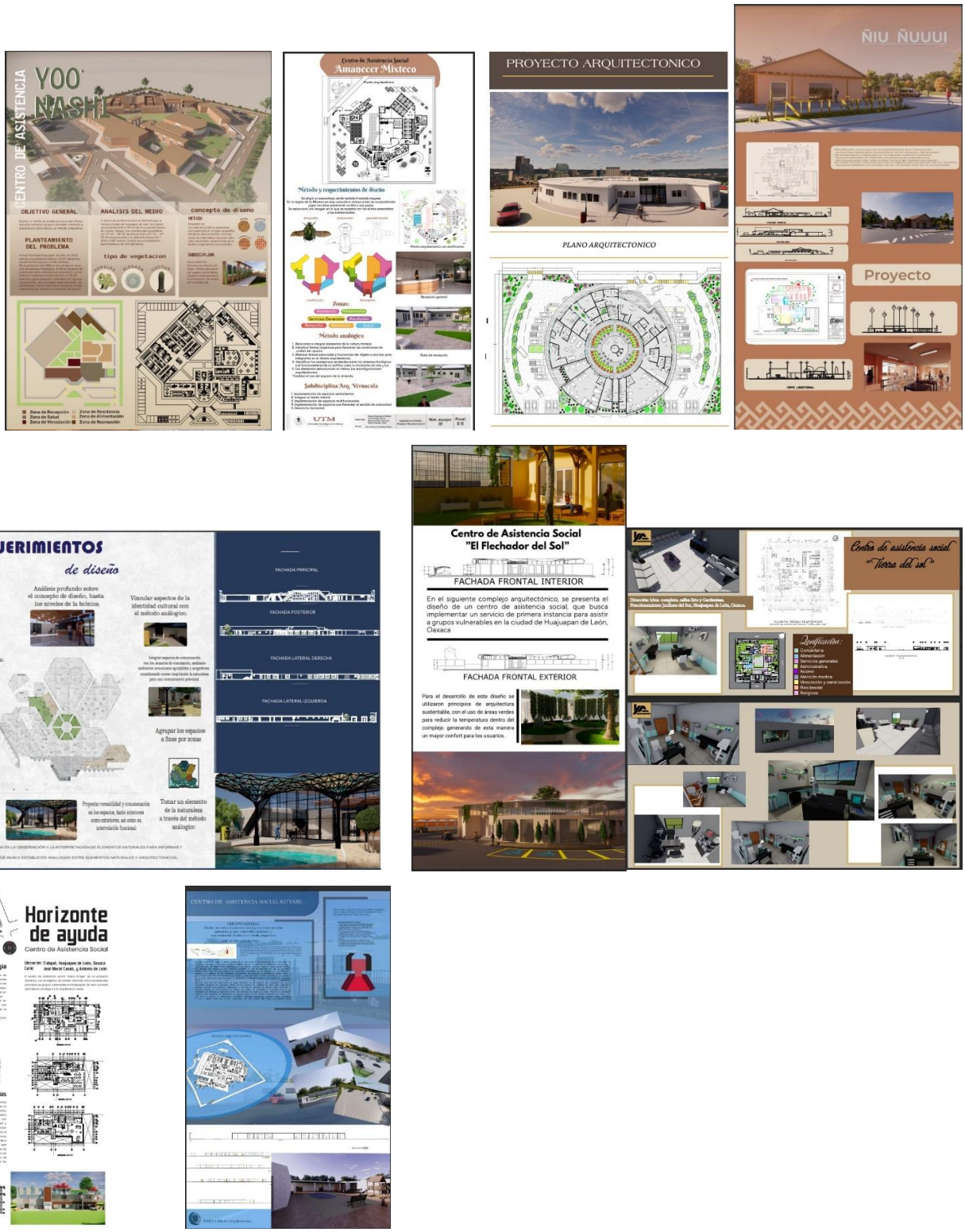


The integration of a methodology for the design of an architectural complex is not finite, it requires a prior and thorough analysis of the scope of the project, the target groups to be served, the radius of action, the area of location, the social and urban context, the geographical conditions and the natural and artificial physical environment within various factors. Sánchez-Platas, L., Sánchez-Luqueño, J. (2016)

It is also necessary to integrate other phases to support the methodology, such as the identification and definition of users, breaking down the activities of the main users through flow diagrams, the integration and constant updating of the study of minimum areas, the analysis of the interrelation of areas and spaces, general and specific operating diagrams and any other phase that allows the integration of a logical and clear file of the project of design.

Figure 6

As a result, nine architectural projects of Social Assistance Centers were integrated to meet the basic and complementary needs of migrants, people with addiction problems, people in street situations, people who have been abused, displaced persons, etc



Finally, nine architectural projects of Social Assistance Centers were integrated to meet the basic and complementary needs of migrants, people with addiction problems, people in street situations, people who have been abused, displaced persons, etc.

As a result of the research phase of the Social Framework, it was determined to integrate the following areas: reception, administration, recreation, food, general services, medical care, linkage and channeling, residence, religious and loading and unloading area.

The natural physical environment addressed the analysis of climate, soil, geological conditions, relief, water and vegetation. Schjetnan, M. Calvillo, J. Peniche, M. (2004)

The artificial physical environment determined the potential for urban development at the housing and commercial level, proximity to the city center, vehicular accessibility, infrastructure, security services, pollution, use of the landscape, paving conditions, among others. Cabeza Pérez, A. (1993)

Nine architectural projects of Social Assistance Centers were generated using iconic, canonical, pragmatic and analog architectural conceptualization.

4 CONCLUSIONS

It is necessary to generate architectural design solutions that address urban and rural equipment projects that consider the social, environmental, landscape, ecological and socioeconomic spheres.

It is convenient to reflect on the architectural design process which is not a finite and established process, each architectural project requires a different methodology.

The methodology for integrating architectural complexes that serve different social groups requires a thorough and exhaustive investigation that allows the integration of a Social Framework to provide a precise solution to basic and complementary needs.

The analysis of the Natural Physical Environment contemplates a review of at least six elements (climate, soil, geology, relief, water and vegetation), at the site, district and/or city level, conditioning the design of the architectural space. Schjetnan, M. Calvillo, J. Peniche, M. (2004)

The analysis of the Artificial Physical Environment contemplates an identification of parameters of the area in which the property is located in relation to the requirements of the Architectural Projects, previously designing a tabulator (correlation matrix), which allows an impartial evaluation of the available properties.

The design of architectural space is not only a creative process, it is a process of research, analysis and synthesis which forges a Design Engineer in his architectural work, and which is perfected over time but mainly with the tenacity to delve into each project in its research phase to obtain an excellent result in each architectural match.

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