Adaptation of sustainable and inclusive strategies for the regeneration of public space. Case Study Herlinda Toral National Technical School

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Abstract-

This research proposes the intervention in an educational center, as can be inferred in a space already built so that it can be regenerated, allowing to implement constructive proposals that improve the planning and urban regeneration, the same that considers formal and functional characteristics with a thorough study of the place, to determine several aspects that influence the area of the Herlinda Toral school, certain spaces are identified as urban voids due to the lack of utility in them, For this reason the problem is generated to consider the best intervention strategy and achieve results to improve the conditions of the place for residents and students, so that the resolution of strategies is implemented based on the references of projects that were carried out in countries such as Brazil and Colombia, finally with the adaptation of design features aligned to the requirements of the area, the revitalization of the case study is generated.

Keywords— Strategies, Urban Gap, Social Cohesion, Regeneration, Revitalization, Urban Void, Revitalization

I. INTRODUCTION

Public spaces from a formal perspective have meant a relationship between the scenario of "the collective", the disclosed, advertised and known, it is the place where democracy and the expression of a will in society can be felt. (Mahecha G, 2012), Within this context the school, it is a privileged institution, because it is the scenario where the configuration of the experiences of the individual begins for its subsequent relationship with the external environment (Meza, 2009), therefore, it encompasses practices of knowledge, the same that are governed by the forms of teaching, study spaces (Ríos R, 2015).

In the city of Cuenca public spaces in this case educational centers are in constant deterioration, because the educational system that is outdated, is still in force, particularly in the Herlinda Toral school, where the shape and distribution of spaces, does not have a difference with respect to a prison or a hospital, practically produces the same effect as a control center, generating aggressive students and with a tendency to carry out criminal activities (Mazon A, 2017). The spaces surrounding the institution produce urban voids such as: the walls of the school, sidewalks, destroyed green areas, this means that, they are abandoned places that do not perform any productive activity and therefore represent a burden for the improvement of the educational system. With the exposed problematic what is sought in this article is to expose the case studies of countries like Brazil or Colombia, where crime rates and school dropouts, were solved by revitalizing the urban void understanding that an educational establishment is not a place divided into several fragments (Moreno V, 2010), but as a unit where everything works together, criteria that should be replicated in the educational institutions of Cuenca where education should be seen as a dynamic form of learning and not as a repressive system that does not allow innovation (Carbonell J, 2006).

This type of fragmented designs where all the spaces are dispersed produces an artificiality where nature is separated from the human being and currently the designs or architectural regenerations must maintain a relationship of

activity between the educator, the students and nature for a complete formation of the individual. (Mawromatis C, 2019) There are multiple examples projected from the rationality to include the being in the natural environment. In general, it is possible to find the model of school by pavilions with the grouping of classrooms in larger packages, surrounded by an artificially created nature, or that of outdoor schools, where classrooms appear scattered in a selected natural environment, as far as possible. (Pozo, 2014).

The most interesting examples are those that reflect on the circulations as if it were a small city (Ramirez F, 2009). In them, the rigid architecture of pavilions is replaced by a more decomposed and articulated one, sometimes even reaching a biological development, with the classroom as the generating cell, under the name of organic architecture (Ruiz, 2016).

To think, even today, that architecture can only be reduced to function, leads to a monotony of the discipline, especially because traditional education has been aimed at creating rational minds that are sufficient by themselves. Reflection on these spaces helps to understand the starting point, but not the solution. All these concepts need to be reviewed in a social moment where the rigid structures that are still proposed do not fit with the multiple existing social models (Pozo, 2010).

II. METHODOLOGY

The methodological framework of this research was built from the perspective of the analysis of Latin American referents of schools where public and private spaces have been integrated as a single unit, in this sense the referents of methodological analysis are the schools of Brazil and Colombia, which in the mid-twentieth century experienced a change in the way of seeing the school, with the emergence of the middle class, in which several challenges arose as the need for a freedom in education and the spread of study in the popular classes.(Castro F., 2018)

With the emergence of the modern movement in architecture, some models of integration of recreational activities, architecture and recreation were produced, Le Corbusier understood the concept of vertical city also as a space for the development of children, and he projected it in the Marseille Housing Complex, where on the rooftop recreation areas were created for students (Altés J, 2011), Aldo Van Eyck instead raised to take advantage of the topography as a space of appropriation of the inhabitants of the place, where it was planned to intervene the ground artificially generating routes, this aspect is important because it helps to generate different levels and spaces for the student, making the school have different levels and there is a dynamic environment. (Carrasquilla J, 2018)

Understanding the dynamism of this research is subject to the revitalization of disused spaces, but with new potential activities that recover society and the environment,

contributing to sustainability (Gomez L, 2016), therefore it is necessary to refer to basic aspects that support this work such as:

a) Urban Voids: They are apparently forgotten places where the memory of the past seems to predominate over the present, they are places where only certain residual values seem to be maintained despite their complex disaffection from the city activity, in short they are external, strange places that remain outside the circuits of productive structures" (Berruete, F. 2015). In another fragment of his article he says: The void denotes absence, but also the promise of encounter as a space of possible expectation (Berruete, F. 2015), under these premises it is clear to understand that they are potentially places to be exploited and integrated into new uses or activities of the city.

b) Open Schools: A definition given by the municipality of Buenos Aires, Argentina "Open Schools is a space linked to the search for solutions to face problems or emergencies that have not found other ways to be addressed at school. At the same time, they become a strategy to strengthen the link between the community, the family, the children and the school". (Buenos Aires, 2022). According to the definition of the Mayor's Office of Medellin in the magazine Aprendiendo de Colombia (2007), it speaks of open schools as "Scenarios for learning to live", fading the physical boundaries of the educational institution, to generate spaces as showcases that allow to see the processes that occur within the establishment, abandon the traditional confinement (Burbano A, 2014), The spaces for children today are strange because it has lost its vocation as a meeting place, that is to say it has gone from being a place to live enriching experiences, growth, education, play etc. ; (Gallegos M, 2003), to being the result of fragmented and routine places, with artificial scenarios, isolated and controlled experiences, as they no longer leave spaces available for exploration and enjoyment (Revista Escala, 2014). Based on this, several countries promoted change for the better management of spaces, in the Latin American context Brazil and Colombia stand out, where the impulse to open schools and the transformation of the so-called non-places, allowed to find other answers to the new social needs as described

c) Brazilian experiences: Education in Brazil underwent several changes, middle class people did not have access to education (Miskolci R. 2019), so different projects were created which had two common characteristics such as: "Need for freedom in education, create educational environments, disseminate science in popular classes and eliminate social barriers" (Oliveira G, 2016). Faced with these premises, projects were promoted that sought to achieve these initial objectives of social integration and education, the school as public spaces, without barriers of repression and its integration with the community. These proposed criteria were adapted and applied to pilot schools

in countries such as Brazil, where in addition to generating dynamic spaces, it was sought to make them inclusive for all students, as is the case of the Parque Centro Carneiro School, where, being located in a low-income area, it was sought that students spend most of the day in the establishment (Eschriqui J. 2021). Regarding the public spaces, it is proposed that they be used for the community as well as for the establishment, likewise instead of creating solid walls, it was projected that they be of a semitransparent enclosure to avoid the feeling of enclosure. (Fernandes, E., & Camargo, P 2017) The circulation of the building is vertical, where there are two blocks one for daycare and another for the school, the topography of the sector produced several slopes with which the recreational spaces are flexible. Fig. 1
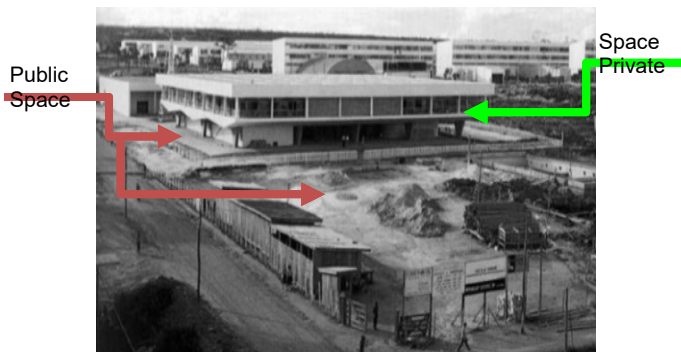
Fig. 1 Centro Carneiro Park School
Source: http://www.fgv.br/cpdoc/acervo/arquivo-pessoal/AT/audiovisual/centro-educacional-carneiro-ribeiro-instalacoes-e-visita-de-anisio-teixeira

d) Colombian experiences: public spaces in schools in Colombia, where there is a polyfunctional model that adapts to social dynamics and tensions, where schools are the social condensers of social behavior (Miñana B, 2012) the challenges that were present for the conception of the spaces was the need to re-integrate the majority of people who abandoned very early the study, where they seek to open the educational institutions inward and outward, where students can make their daily lives intrinsically in the institution avoiding their descent. (Rodríguez E, 2017). There are examples of educational centers such as Colegio Santo Domingo, where it is located on a hillside in the city of Medellin with a slope of 35%, near the communes of one of the most dangerous areas, terraces and courtyards were designed, as a way to integrate the building, (Gonzalez, 2011); the public spaces that are integrated with the context are the use of the roof as a viewpoint for the community, where the school is located at the bottom of the viewpoint, without the need to present dividing walls, however there are spaces for the control of the students (Nail S, 2018). Fig 2

Fig. 6 Flor del Campo Educational Institution
Source: https://www.plataformaarquitectura.cl/cl/02-40659/institucion-educativa-flor-del-campo-giancarlo-mazzanti-felipe-mesa/574264f8e58ece6ec90002d5-institucion-educativa-flor-del-campo-giancarlo-mazzanti-felipe-mesa-foto?next_project=no

After having analyzed several case studies, it is necessary to mention the strengths they share in terms of their design, such as generating platforms for the separation of spaces, the creation of permeable walls that avoid the feeling of repression in students, a correct delimitation of spaces by zones and the linking of the equipment they have with the community, however these criteria were applied in part thanks to the budget they had, since they are intended for the upper classes of their countries (Barrera F, 2012), in addition there is a contrast in terms of their designs with the context of the locality where they are located.

III. LOCATION OF RESEARCH

The city of Cuenca until the 1960s, maintained a significant growth, its expansion extended to the east (currently Totoracocha), an area that for many years was uninhabited, it was a place with large plains, forests and lagoons, hence its name because the existence of cattails was frequent on the site, as the city expanded these natural elements were disappearing or clogged, thus giving way to the emergence of one of the largest and most populous neighborhoods of the city, now divided into several citadels (Flores G, 2016). (Flores G, 2016). The accelerated growth towards Totoracocha, the lack of control and planning allowed the gradual densification and urbanization of the entire area, producing with this a problem in terms of public spaces, as their presence is reduced and does not fully meet the needs of the inhabitants of the place (Flores G, 2016). The study case is located in this sector and is defined as shown Fig 3

Herlinda Toral School is located in the province of Azuay, canton Cuenca, between the streets Altar Urcu, Malacatus River, Jubones River and Paseo de los Cañaris Avenue; belonging to the Totoracocha neighborhood.

Fig.3 Herlinda Toral National Technical College
Source:
https://www.facebook.com/fedebanegrEc/photos/breve-rese%C3%B1a-historica-del-colegio-nacional-t%C3%A9cnico-herlinda-toral-de-la-ciudad-/122794179541813/?_rdr

The Herlinda Toral school is totally isolated because it is surrounded by a wall around its perimeter, which means that at the end of the school day its surroundings become dangerous and prone to vandalism. Among the most important problems are the following:

- Physical barriers: The school is bounded by walls around its entire perimeter, which prevent internal communication with the community where it is located.

- Lack of vegetation: The green spaces within the property do not have enough trees or vegetation to enhance their use.

- Space for vehicles: There is a large parking area at the front of the site that restricts the use of public activities that could be offered.

- At the end of the day, the surrounding area becomes dangerous and prone to vandalism.

- Insecurity: The lack of lighting and treatment of the adjacent roads reduces their use and the frequency of visitors at certain times of the day.

- Pedestrian street invaded by vehicles: next to its location there is a pedestrian street with very little treatment, where there is no adequate lighting, with little visual integration to strengthen the harmonious use of the context.
- Disorderly blocking: Several blocks of classrooms and other different uses have been placed, but their implementation is disorderly and makes minimal use of the available space.

This educational facility lacks proper lighting, green spaces without use, there is an invasion of pedestrian streets by vehicles, analyzing all these variables it can be concluded that the building does not have a correct relationship with its immediate environment, which has generated urban voids that have led to increased crime, destroyed spaces, in addition to the building works in an unfragmented way and is not conceived as a single unit, the system of perimeter walls that maintains the institution generates a feeling of repression in the students, the spaces designed are not inclusive for people with disabilities, this what causes in the academic field is to further increase the differences in terms of disabilities in addition to encouraging school dropout, however, its strengths can be taken advantage of such as being located in a strategic place in relation to the historic center, it has in its closest surroundings security, health and recreation facilities. Mapping of problems: The graph shows the problems detected and their location within the Project Fig 4.

IV RESULTS

An urban architectural intervention is proposed to address the use of semi-public spaces from a sustainable community perspective, this implies a working model where the technical fabric, citizenship and especially youth, can from a better knowledge of their realities, a better use of spaces that generate urban voids, as an educational opportunity and community social integration.
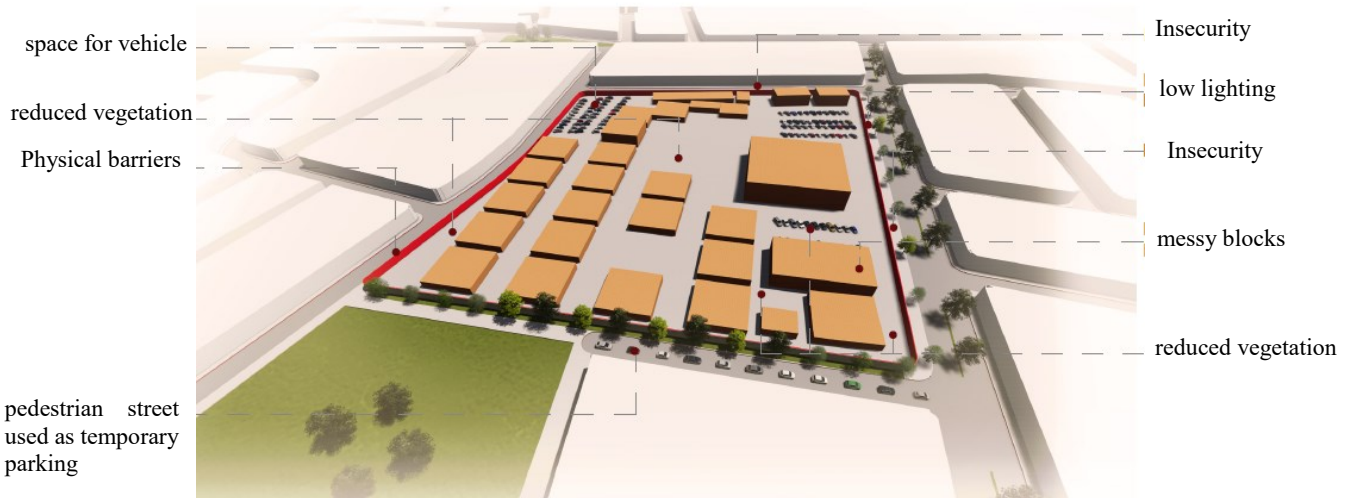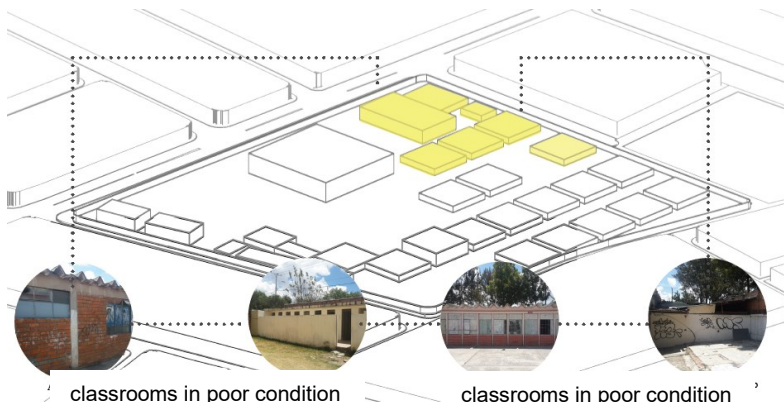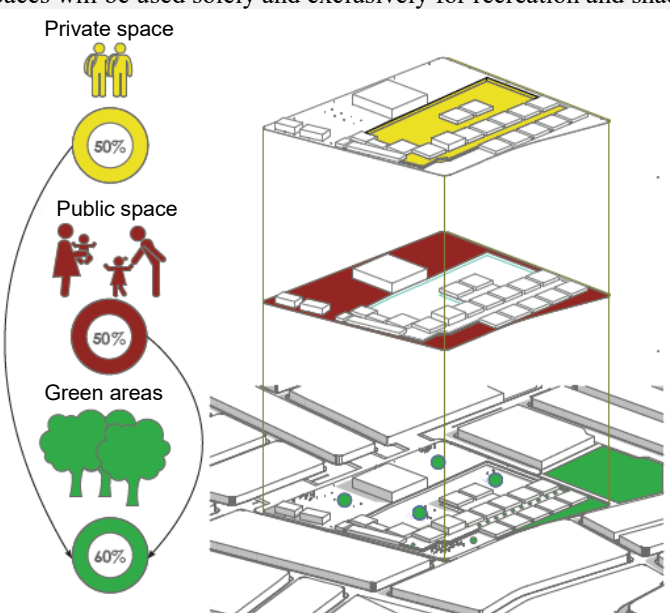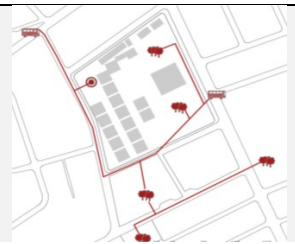

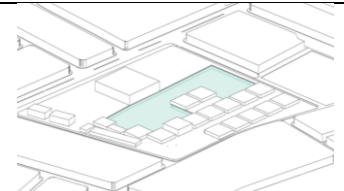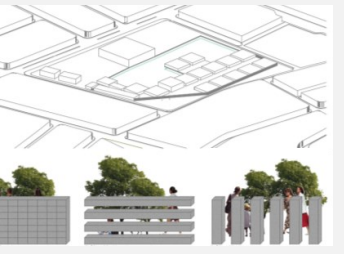
Fig.4 Map of problems

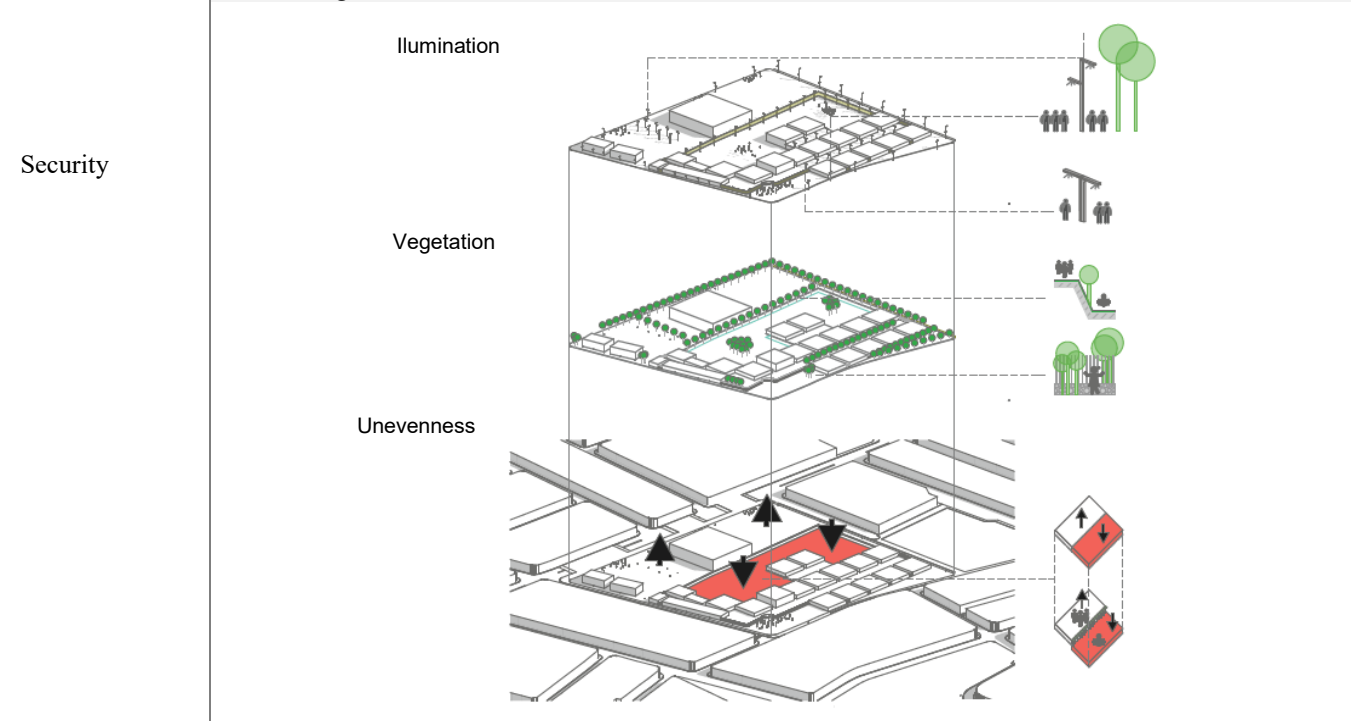| STRATEGY	JUSTIFICATION AND INTERVENTION PROPOSAL
Blocking	Buildings that were part of the first stage of construction and are now in disuse and abandonment, it is proposed to eliminate them. Another criterion taken from the study referents is the use of the educational institution itself, through the use of blocks, where each one performs a specific activity, which will serve to organize the spaces, achieving the integration of the entire institution to the community space. classrooms in poor condition classrooms in poor condition
Determination of Public and Private Space	1. The project will maintain 50% of the property as private space for the exclusive use of students, in which platforms and permeable walls can be placed, with community character. 2. 50% of the total area is allocated for public use, for recreation and social cohesion, while the community is part of an educational environment, neighborhood connection and visual quality. 3. The reserved spaces will be used solely and exclusively for recreation and shade.

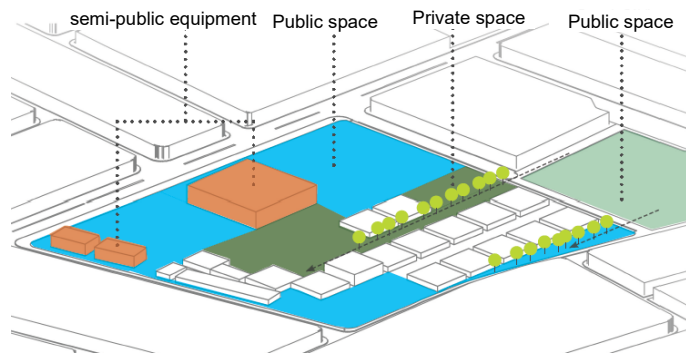| STRATEGY	JUSTIFICATION AND INTERVENTION PROPOSAL
Connections		The relationship between users and bus stop furniture, creating routes that link existing public spaces, achieving dynamism between community and equipment

Topography		According to the Colombian referents, it was found that the management of topography has served as an enclosure strategy, but without using walls, based on this the use of platforms helps to guarantee the internal security of the establishment, generating a new perspective of visual integration.
Enclosures		"There has been a proliferation of architectures that proclaimed their envelope as an effective mechanism of meaning, and not exclusively its form" (Sanchez R. 2018), based on this the enclosure must provide security, but should not be a blind wall that denies the visual connection with the environment, in the Brazilian referents the principle is remarkable, transparency is effective, as it promotes visual, social integration and commits to community safety, therefore this proposal seeks to handle similar criteria to potentiate the architectural urban contextual integration

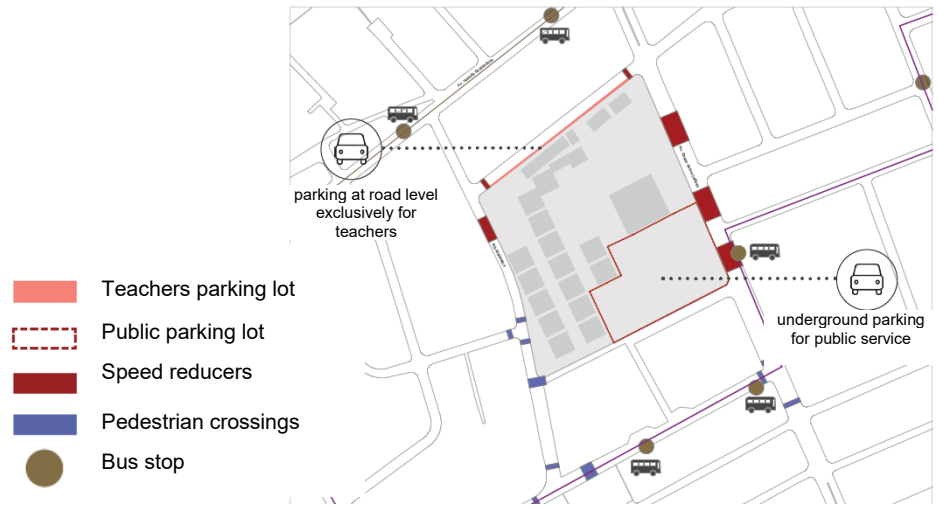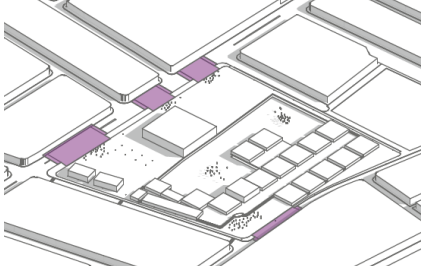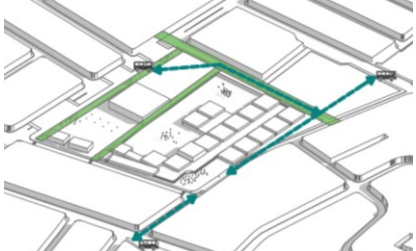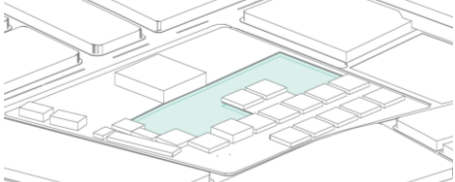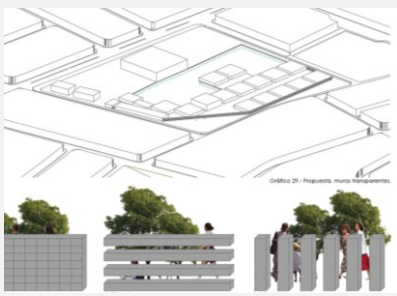| STRATEGY	JUSTIFICATION AND INTERVENTION PROPOSAL
Security	Lighting: the spaces will maintain balanced heights between vegetation and lighting, so that they do not compete, but are integrated to form pleasant spaces. The arrangement of landscapes in which trees, flower beds and fountains constitute an artistic composition, has been practiced in this country for a long time. The task of the lighting designer is to create pleasant visual impressions that allow retaining the value of the pleasure of architecture and nature at night. Vegetation: it will be ordered with the appropriate type and size, endemic species that allow protecting spaces, separating zones, without losing visual security. The recovery or implementation of species suitable for the ecosystem of the study site provides greater coverage and protection in hours of pronounced solar incidence. (Salinas J. 2020). The platforms: taking advantage of the topography and taking part of the referents implement spaces at different levels for the use of students, turning both internally and externally into dynamic spaces, suitable for learning and recreation.

STRATEGY	JUSTIFICATION AND INTERVENTION PROPOSAL
Distribution of Public, Semi-public and Private Space	The end of education, some "narratives" are identified that organize the debate about the school, putting in confrontation the reconstruction of education as a private space or its renovation as a public space (Nóvoa A. 2021). It is clearly marked the spaces that will be destined as private and will continue to belong to the educational entity, while another part will become public for free access and recreational use, finally the blocks that are currently used as Coliseum and Library, should become semi-public spaces for the community to integrate the space to appropriate and use it.

STRATEGY	JUSTIFICATION AND INTERVENTION PROPOSAL
Mobility	Spatial mobility allows rethinking the territorial definition of population and the delimitation of geographical contexts that influence socio-demographic processes (Módenes J. 2008). Mobility distribution and accessibility to parking lots for teachers and users: • Implement speed reducers in front of the main access and in the part that becomes public place three for accelerated traffic control. • Establish crosswalk areas and under sufficient treatments as required by the city's Mobility Plan, to ensure the safety of students and users. • Parking areas at the roadway level for teachers that would improve the connection of the space, with security controlled by the city's 911. • The change of use and opening of public and semi-public spaces will be enhanced by implementing a subway parking area not only for the users of the educational establishment or those visiting the recreational areas, but also complementing the activities of the buildings defined as semi-public, so that their use is optimal.

STRATEGY	JUSTIFICATION AND INTERVENTION PROPOSAL	
		It is a fixed structural device, which operates as a speed reducer, and consists of the transversal elevation of the roadway in a certain section of the road. Its function is to reduce the operating speed of motor vehicles, ensuring that they circulate at a controlled speed, which will allow safer vehicular traffic (Auquilla A. 2013). The roadway drop has been chosen as an alternative for pedestrian protection.
Functionality		The connection of public spaces plus the road improvement, achieves that in the corner of the establishment a wide space is obtained, allowing security at the entrance, a place of permanence for students and population. The vehicular route is circular around the block with an improved roadway, which provides more and better pedestrian movement. The proposal is complemented by green routes that will serve as protection margins for pedestrians with respect to vehicles.
		Pedestrian mobility is safe since there are wider spaces within the block, connecting bus stops and green axes that generate dynamism and integration.
Connections		The relationship between users and bus stop furniture, creating routes that link existing public spaces, achieving dynamism between community and equipment
Topography		According to the Colombian referents, it was found that the management of topography has served as an enclosure strategy, but without using walls, based on this the use of platforms helps to guarantee the internal security of the establishment, generating a new perspective of visual integration.
Enclosures		"There has been a proliferation of architectures that proclaimed its envelope as an effective mechanism of meaning, and not exclusively its form" (Sánchez R. 2018), based on this the enclosure must provide security, but it should not be a blind wall that denies the visual connection with the environment, therefore this proposal seeks to handle similar criteria to potentiate the architectural urban contextual integration

V. CONCLUSIONS

One of the most relevant strategies is that which focuses on the opening of schools, i.e., experiences that "open" schools in several simultaneous senses.

The pioneering initiative in this regard has undoubtedly been Brazil's "Opening Spaces" Program, promoted by UNESCO and the Ministry of Education. Currently, around 5 million adolescents are participating in this important initiative and the evaluations that have been carried out so far show highly relevant results at various levels simultaneously.

The basic assumption of the experience is that one of the key factors to explain youth violence is constituted by the lack of infrastructure and the absence of initiatives in the sports, cultural and recreational fields, which allow channeling the energies, free time and interests of the new generations. In the same line, the program is based on the conviction that education is not an exclusive patrimony of educational institutions, but that it is deployed in many different spheres of society.

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