ARCHITECTURE STUDENT CONTEST

CONTEST TASK

ARCHITECTURE STUDENT CONTEST 2023

Lisbon, Portugal

WORLD GREEN BUILDING COUNCIL

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ABOUT THE ARCHITECTURE STUDENT CONTEST BY SAINT-GOBAIN

The Architecture Student Contest, formerly Multi Comfort Student Contest is a two steps competition: the National Stage and the international Stage. It was organized for its first time in 2004 by Saint-Gobain Isover in Serbia and became an international event in 2005. The last Warsaw edition attracted more than 1 ,600 students in 32 countries.

ACNOWLEDGMENTS

Special thanks to our partners, the city of Lisbon, professors participating in the Teacher's Days and Saint-Gobain Portugal for all the support during the development of the contest task.

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CONTENT

1. BACKGROUND

CITY CONTEXT & CHARACTERISTICS

Located on the right bank of the Tagus estuary, at 38º42' N and 9º00' W, with maximum altitude in the Monsanto Hill (226 meters of altitude), Lisbon is the most western capital of Europe. It is located in the center/west of Portugal, on the coast of the Atlantic Ocean.

Lisbon is the capital and the largest city of Portugal, with an estimated population of 544,851 within its administrative limits in an area of 100.05 km². Lisbon's urban area extends beyond the city's administrative limits with a population of around 2.7 million people, being the 10th-most populous urban area in the European Union.

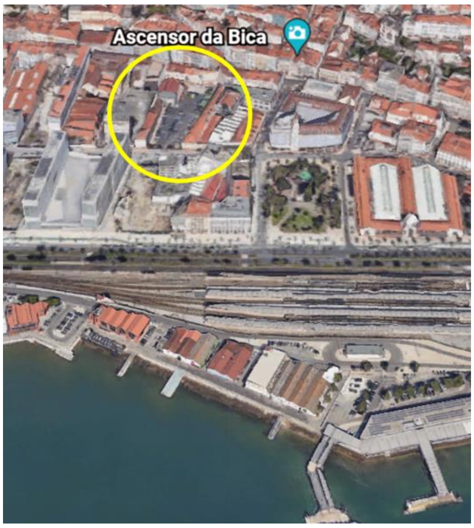
The historic center of the city is made up of seven hills, some of which are too narrow for vehicles to pass through. The city uses three funiculars and an elevator. The western part of the city is occupied by the Monsanto Park, one of the largest urban parks in Europe, with an area of almost 10 km².

Lisbon has gained ground from the river with successive landfills, especially from the 19th century onwards. These landfills allowed the creation of avenues, the implementation of railway lines and the construction of port facilities and even new urbanizations such as Parque das Nações and facilities such as the Belém Cultural Center.

CONTEST TASK GENERAL DESCRIPTION

The task of the 18th edition of the international student competition organized by Saint-Gobain Group, in close cooperation with the City of Lisbon, is to develop a proposal for the revitalization with public and cultural use of the plot included in the **Boavista Landfill** urban area, currently belonging to the City Hall and used to host several municipal services.

This area is located west from the City Center, close to the river bank, in a flat area that was gained to the river by landfill in the end of the 19th century, and represented one axis of development out of the old town along the river, welcoming industry that developed taking advantage of the ease of communication presented by the river. On the back of this area starts one of Lisbon's hills, a famous neighborhood called Bairro Alto.



The task proposes that the area under study should be redefined to be used as a local cultural center, oriented for audiovisual art with the creation of the new **Lisbon Video Library** as the center of a triangle formed by nearby art schools: ETIC (https://www.etic.pt/), IADE (https://www.iade.europeia.pt/) and FINE ARTS SCHOOL (http://www.belasartes.ulisboa.pt/); and in the proximity of the HOUSE OF CINEMA in Bairro Alto.

The project must be compliant to the City Urban Plan guidelines, innovative and sustainable and comply with the technical guidelines prepared by Saint-Gobain. Should also be compatible with the area's surroundings and economically feasible.

CITY PLANNING FOR THE FUTURE

The Lisbon Municipal Master Plan extends the concept of urban rehabilitation to the entire municipal territory, since the available land for new construction becomes less. With it, the private rehabilitation of buildings is supported by intervention in the community space. Furthermore, aims to associate mobility to the qualification and enjoyment in the public space by the community itself, moderating car circulation and promoting smooth ways of transportation.

The environment is a structural subject of the Plan, by the implementation and development of the Municipal Ecological Structure that aims to ensure the continuity of natural systems.

The Plan also wants to promote a change from a radio concentric model of city organization to a more neighborhood based pattern.

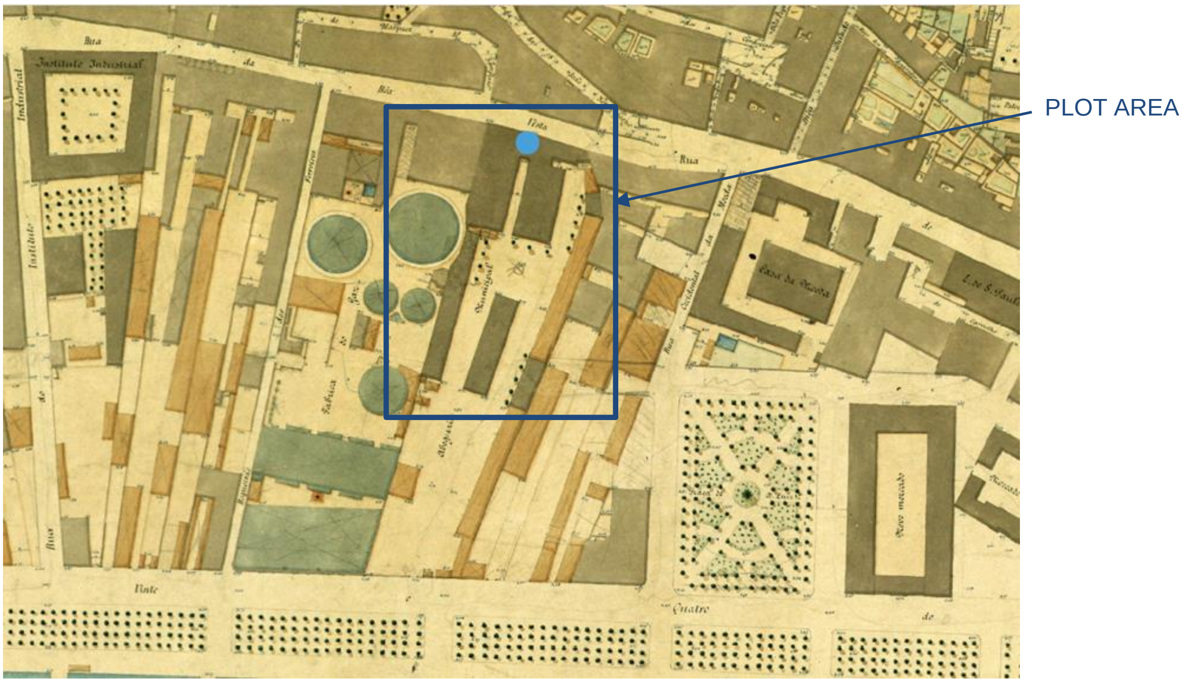
Bringing continuity to the efforts and positive actions of the previous plans, with a visionary look at the present and aiming for the future, the Municipal Master Plan materializes a territorial development strategy, guided by 7 major objectives that will guide the development of the city:

. Attract more inhabitants;
. Attract more companies and jobs;
. Boost urban rehabilitation;
. Qualify the public space;
. Return the riverfront to the people;
. Promote sustainable mobility;
. Encouraging environmental efficiency.

Making Lisbon visible and relevant in global and national networks, the regeneration of the consolidated city and urban qualification are the focus and priorities of the vision for the City**.**

PLOT CHARACTERIZATION AND VISION FOR THE FUTURE

The plot is included in an area named Aterro da Boavista Nascente (East Boavista Landfill), which is included in the area of the “Big Landfill” from Boavista Street to the south extending until the river bank, whose construction began in 1855 with the intention of “sanitizing” a dirty and degraded industrial area, made up of a succession of small ravines and private landfills that served the small industries that were growing in a disorganized manner.



Urban Plan of Aterro da Boavista dating from 1878

The land lots are very long and narrow, extending from Boavista street almost to the river, a structure that was originated in the old “boqueirões”, river penetrations perpendicular to the bank that flooded on the high tide, and served as boat access to the industries and warehouses implanted there, essentially linked to the riverside activity.

This heritage is, in fact, very present in land lots that are still under the same matrix, despite being cut by D. Luís I street, which was open across this large block in a later time. The sometimes intricate and disorganized form of occupation of the lots is also a consequence of the evolution of this area. The initial industrial purpose of this entire area is still very clear today; it is present in the register, in the vestiges of the warehouses of the various companies that were installed, in the very type of trade that until recently existed: trade in industrial and construction equipment and all types of materials related to these activities.

The architectural portrait of this set sought to, in a way, dilute its industrial character, defining on the Boavista street side an urban front where the offices and shops are located, establishing a relationship with the eminently residential buildings on the other side of the street, being created, on the 24 de Julho avenue side, facades that “hide” the interior of the industrial quarter.

Look of the plot area in the early 20th century

Since the last quarter of the 19th century, the plot area was used by the City Hall as a base for the horses that served the municipal public services, namely the streets cleaning service. The initial use of the long building on the east side was as a shelter for the animals. Throughout the years, the area evolved to one of the uses nowadays, which is the Urban Hygiene Service.

Aspects of the area's use along the years

This land tenure matrix that historically shaped the space is also assumed in the Detailed Plan of East Boavista Landfill, the Development Plan that was approved by the City Hall for this area of the city. Its urban design proposes to maintain the elongated character of the buildings that are projected towards the river and, in this way, maintains the visual permeability between the hill of Santa Catarina and the River, while opening up the possibility of pedestrian circulation and enjoyment of the spaces released between the buildings that are essentially green and permeable.

City Hall **Detailed Plan of East Boavista Landfill** with Plot area location

The renovation of the functional profile in this city area is the main objective, regenerating what has been the loss of activity and the obsolescence to new patterns of urban functions that enhance modernity and attract innovative and emerging ways of life and activities, focused on valuing the centrality and urban environment of great patrimonial and landscape value.

The criteria of environmental and energy sustainability, as well as the increase in urban resilience, are incorporated into the plan's solutions, namely by the mix of uses that it admits, aiming for the achievement of a city of neighborhoods, where to live, work and enjoy the free time can be possible in complementarity; by the expansion and requalification of the public space, promoting active mobility; and the densification of tree cover and vegetation along with areas of rainwater infiltration.

Proximity urbanism is an important concept, reinforcing the sense of belonging and community, through the renovation of public space by reinforcing the enjoyment of green spaces, the promotion of neighborhood centralities and universal accessibility, framed in the redefinition of parking offer and improvement of conditions for smooth mobility, with comfort and safety.

The promotion of small cultural centers aims to help everyone to cultivate habits of thought, creation and artistic enjoyment. Culture is seen as a meeting place. Meeting between the past and the future, between the digital and the analog, between the old and the new.

2. ABOUT LISBON: HISTORY, POSITION AND CLIMATE

HISTORICAL SUMMARY OF CITY DEVELOPMENT

Lisbon is one of the oldest cities in the world, and the second-oldest European capital city (after Athens), predating other modern European capitals by centuries. Julius Caesar made it a municipium called *Felicitas Julia*, adding to the name *Olissipo*. After the fall of the Roman Empire it was ruled by a series of Germanic tribes from the 5th century; later it was captured by the Moores in the 8th century. In 1147 the King Afonso Henriques conquered the city and since then it has been the political, economic and cultural centre of Portugal.

Centuries later, in 1256, by decision of King Afonso III, the city takes the role of capital of the young Portuguese kingdom.

In the 14th century, Lisbon on the rise becomes the main engine of the global economy with the Portuguese Discoveries around the world and the overseas expansion.

The regular quarters of Bairro Alto, to the west of the medieval wall, the first planned urban extension of the city, which developed between the 15th and 16th centuries, embody a set of rules established by King Manuel I, contrasting with the diffuse geometry of the urban fabric of medieval origin. To the west, Belém becomes the intercontinental port of Lisbon, and from the year 1501, with the construction of the Jerónimos royal monastery, the privileged outskirts of the city.

On November 1st 1755, Lisbon is violently shaken by a powerful and unexpected earthquake followed by an overwhelming tidal wave that severely destroys the city.

Despite the adversity, on December 4 1755, just over a month after the disaster, the first part of the Plan for the reconstruction of Lisbon was presented by the chief engineer Manuel da Maia to the prime minister, Marquis of Pombal, becoming part of the founding documents of the city modern urban planning. To this day, its influence on the city's image and architectural and urban culture is seen as decisive.

During the 19th century, political and economic liberalism prevailed in the country, and with it the bourgeois enjoyment of the city. The public space of the city is multiplied in theatres, shops, gardens, while, at the same time, the city, understood as a house, covers the floor with artistic paving and the facades with patterned tiles. This growth of the City is largely supported by the development of public transport, whose service is inaugurated in 1873.

It was in this effervescent atmosphere that in 1879 the demolition of Lisbon's main public garden was approved and the opening of the iconic Liberdade Avenue in its place, which materialized the direction of growth of the City to the North, breaking the ancestral idea of a Lisbon overlooking the Tagus river.

The opening of Liberdade Avenue and the approval of the General Improvement Plan, which gave rise to New Avenues, respectively from 1886 and 1904, is directly inspired by the network of Haussmannian boulevards in Paris, and heralds the Lisbon road of the 20th century.

It was already in the transition to the 20th century that the port of Lisbon occupied the western riverside arch, which includes the Boavista landfill, which, to the south, enshrines the closing of the city from the river.

With the Master Plan for Urbanization in 1959, the development of the City was maintained in a radio concentric model. The crossing of the Tagus is finally carried out with the construction of Salazar Bridge, currently 25 de Abril, inaugurated on August 6 1966, establishing the crossing of the Tagus in conjunction with the national road network.

LISBON CLIMATE CONDITIONS

Lisbon is one of the mildest capitals in Europe, with a Mediterranean climate strongly influenced by the Gulf Stream. Spring is cool to hot (8°C to 26°C) with sunshine and some showers. Summer is generally hot and dry, with temperatures between 16 °C and 35 °C. Autumn is mild and unstable, with temperatures between 12 °C and 27 °C and winter is typically rainy and cool, also with some sun. The lowest temperature recorded was -1.2 °C on February 11 1956 and the highest was 44.0 °C on August 4 2018. The sea water temperature varies between 15 °C and 16 °C in February and between 20 °C and 21 °C in August and September, with an annual average of 17.5 °C. On summer afternoons, the wind tends to blow moderate (sometimes strong) from the northwest. Due to its geographical condition, it is among the European capitals with milder winters, temperatures below zero are rare and snowfall is quite sporadic; although the most recent records date from 2006 and 2007, many years can go by without snow in Lisbon.

Climate data for Lisbon													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Mean daily daylight hours	9.8	10.7	11.9	13.2	14.3	14.8	14.6	13.6	12.4	11.1	10.0	9.5	12.0

Climate data for Lisbon (extremes 1836-present)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	23.1 (73.6)	25.4 (77.7)	29.4 (84.9)	38.7 (101.7)	35.1 (95.2)	41.5 (106.7)	40.6 (105.1)	43.3 (109.9)	38.4 (101.1)	35.3 (95.5)	27.8 (82.0)	23.2 (73.8)	43.3 (109.9)
Average high °C (°F)	14.5 (58.1)	15.6 (60.1)	17.6 (63.7)	19.1 (66.4)	21.7 (71.1)	24.8 (76.6)	27.4 (81.3)	27.9 (82.2)	26.4 (79.5)	22.4 (72.3)	17.8 (64)	14.8 (58.6)	20.8 (69.5)
Daily mean °C (°F)	11.4 (52.5)	12.3 (54.1)	13.7 (56.7)	15.1 (59.2)	17.4 (63.3)	20.2 (68.4)	22.4 (72.3)	22.8 (73.0)	21.7 (71.1)	18.5 (65.3)	14.5 (58.1)	11.8 (53.2)	16.8 (62.2)
Average low °C (°F)	8.2 (46.8)	9.0 (48.2)	9.9 (49.8)	11.1 (52.0)	13.0 (55.4)	15.6 (60.1)	17.4 (63.3)	17.7 (63.9)	17.0 (62.6)	14.6 (58.3)	11.2 (52.2)	8.9 (48.0)	12.8 (55.0)
Record low °C (°F)	0.0 (32.0)	-0.9 (30.4)	0.3 (32.5)	4.3 (39.7)	6.4 (43.5)	9.5 (49.1)	12.1 (53.8)	11.2 (52.2)	10.3 (50.5)	6.7 (44.1)	2.9 (37.2)	0.0 (32.0)	-0.9 (30.4)
Average precipitation mm (inches)	103 (4.0)	74 (2.9)	70 (2.8)	63 (2.5)	53 (2.1)	12 (0.5)	2 (0.1)	5 (0.2)	34 (1.4)	108 (4.3)	122 (4.8)	106 (4.2)	753 (29.6)
Average rainy days	15	12	14	10	10	5	2	2	6	9	13	15	113
Average relative humidity (%)	80	78	71	69	66	66	63	61	67	72	77	79	70.8
Mean monthly sunshine hours	*161*	*180*	*206*	*265*	*301*	*330*	*378*	*357*	*279*	*231*	*174*	*159*	*3,017*
Average ultraviolet index	3	3	4	4	5	6	6	6	6	5	4	3	5

Climate data for Lisbon - Sources:
www.weather-and-climate.com
www.worldweatheronline.com/lisbon-weather-averages/lisboa/pt.aspx
www.pogodaiklimat.ru/climate2/08535.htm
www.lisbon.climatemps.com

3. GENERAL INFORMATION ABOUT THE TASK

The task for the 18th International Saint-Gobain Student Contest is to design the revitalization of an area located west of the Lisbon City Center, along the river Tagus, belonging to the City Hall, anchored in a new cultural activity complemented by residential functions.

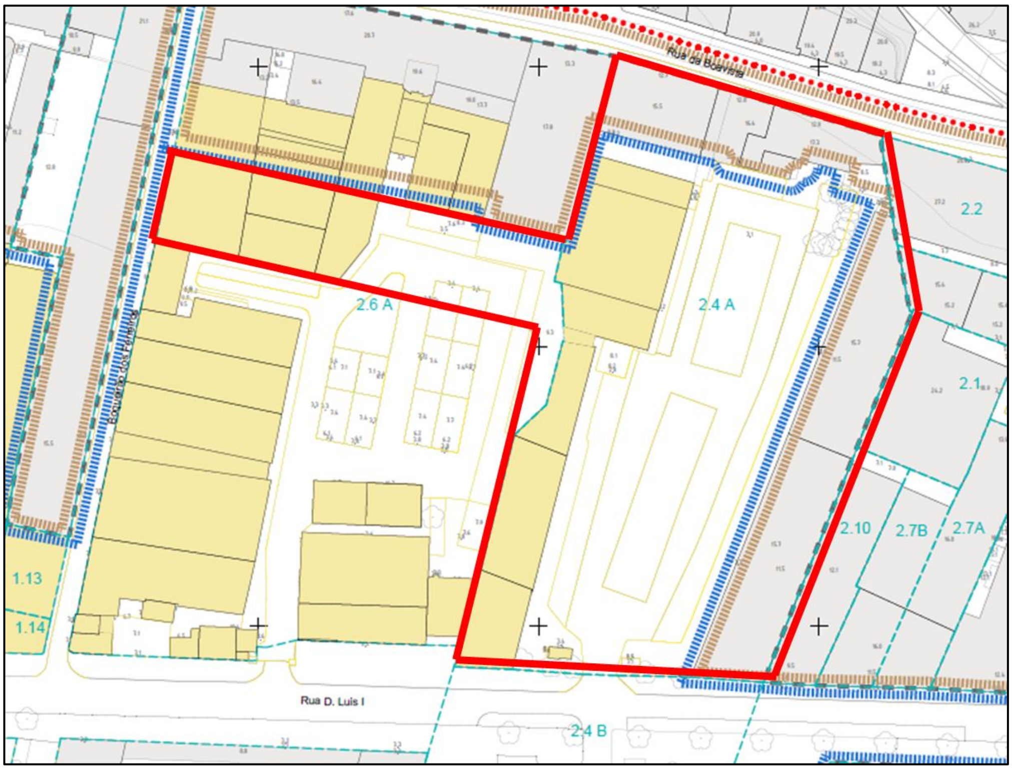
The challenge for the students includes three items:

A. To create the new Lisbon Video Library (Building A), by renovating an existing building on the east side of the plot, facing the interior.

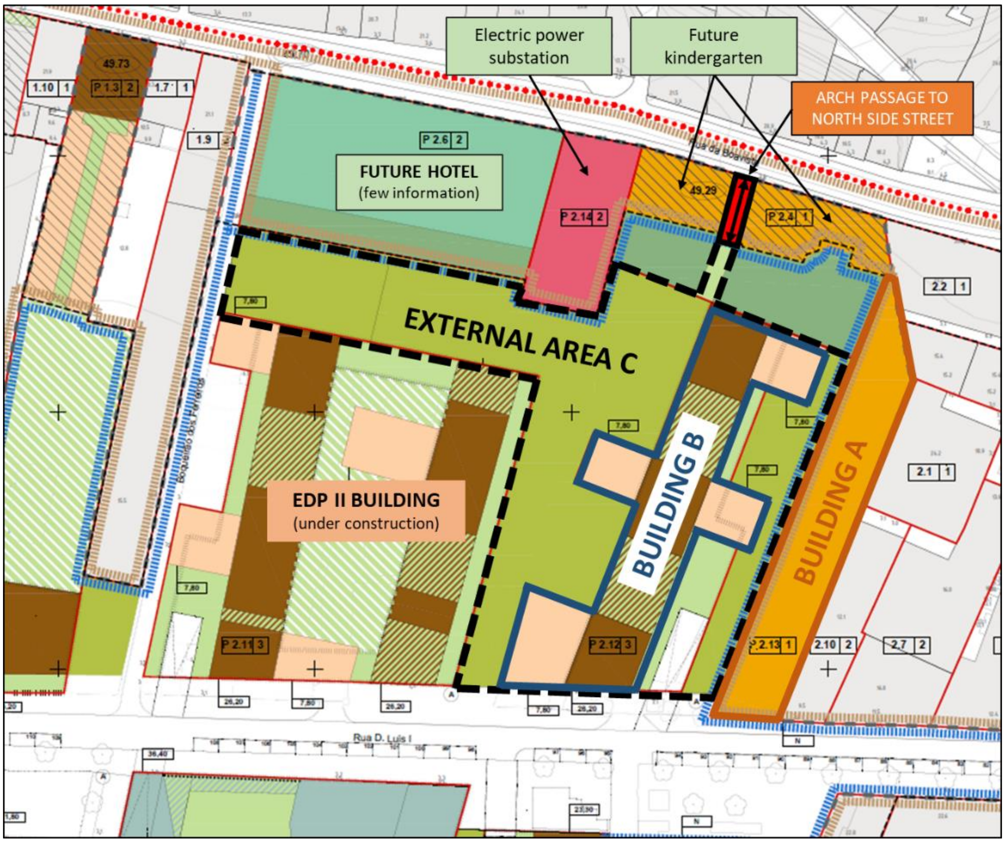
B. To design a new residential building (Building B) with underground auto parking, that will combine private residence and co-living residence for resident artists or investigators using the Lisbon Video Library and it's Audio Vision Center.

C. To design the interconnection of the buildings (External Area C) by exterior public green spaces to be used as enjoyment spaces, allowing the quarter crossing and connection with surrounding streets

The current organization of the plot includes a number of buildings to be demolished, marked in yellow in the following image.



Mapping of buildings to be demolished (yellow color)



Mapping of Task Items

BUILDING A

This existing building is designated in the Detail Plan for the Boavista Landfill as P12.13 and is intended to be renovated to accommodate the new **Lisbon Video Library** and the **Lisbon Film Commission**, as a hub dedicated to "moving image" in film and video.

The **Lisbon Video Library** aims to make available to public and investigators the archive of audiovisual contents about Lisbon, regarding themes, personalities and events related to Lisbon, in its diverse forms and genders: documentary, fiction and animation movies, amateur movies, short and feature films. It is also intended to organize film programming to promote debate, reflection and discovery of the city through cinema.

The **Lisbon Film Commission** has the mission of promoting Lisbon, nationally and internationally, as a privileged location for filming and photo shootings.

The building is organized facing the interior of the plot, both in what concerns the access and the windows providing natural light. Nowadays, the building is organized in 3 stages, including ground stage and 2 elevated stages. The global architectural form of the building and the external original appearance should be maintained.

The structure is made of reinforced concrete, with pillars, beams and slabs. The facade is made of rendered masonry, and the windows are topped by a ceramic brick arch with some small decorative elements made of local limestone.

The renovation works should be compatible with the original architectural and building characteristics, keeping and recovering specific elements considered important to characterize the built set. The exterior envelope of the building should be free of dissonant elements, such as equipment, cables and ducts. The existing roof design and shape should be respected and maintained.

The future building organization should include:

<u>LISBON VIDEO LIBRARY area</u>

a. <u>Common spaces</u>

1. Welcome/reception and public forwarding – 12 m2
2. Auditory for 140 persons – 200m2
3. Exhibitions room – 300m2
4. Cafeteria/foyer – 100m2
5. Shop – 20m2
6. Public bathrooms – 45m2

b. <u>Services</u>

7. Secretary and administration support room – 20m2
8. Video edition room – 40m2
9. Sound studio – 12m2
    i. Working area for 1 person, in silent zone
    ii. Acoustic treatment, diffusion and absorption

iii. Recording cabin, totally isolated, with 1,06x1,38x2,25m

10. TV/Cyclorama studio – 100m^2
    i. Double height open space, allowing total blackout
11. Film and video description room – 40m^2
12. Deposit and archive room – 40m^2
    i. Archive space for 11600 videographic items in various shapes
    ii. Resistant to electromagnetic external interference
    iii. Controlled environment: temperature 15°C and R.H. 50%
    iv. Without natural light
13. Video digitalization room – 40m2
14. Individual visioning room – 30m2
    i. 3 visioning stations for 2 persons, aprox. 9m2 each
    ii. Without direct natural light
15. Technical support to individual visioning room – 6 m2
    i. Support to visioning stations
16. Collective visioning room – 120m2
17. Reading space – 15m2
18. Filming equipment storage room – 20m2
19. Executive project production room – 30m2
20. Coordinator room, with meeting table – 20m2
21. Meetings room – 20m2
22. Networks Servers and Backstage room – 10m2

<u>LISBON FILM COMISSION area</u>

23. Coordinator room, with meeting table – 20m2
24. Meetings room – 20m2
25. Working room – 40m2

<u>Common spaces</u>

26. Workers bathroom – 25m2
27. Workers eating/pantry area

BUILDING B

This new building is designated in the <u>Detail Plan for East Boavista Landfill</u> as P2.12. It is intended mostly for residential use, divided in three areas:

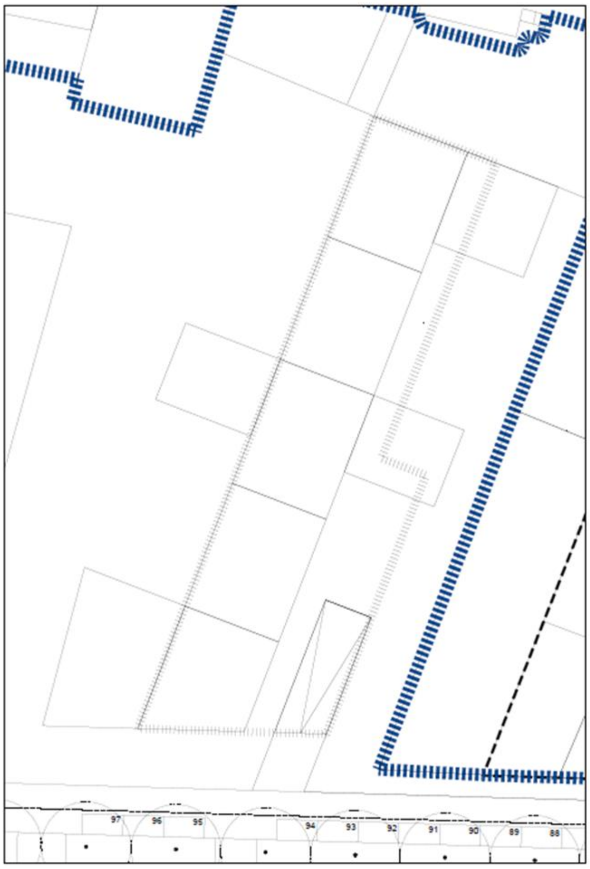
a. Ground floor entirely dedicated to external access to elevated floors, to commerce or service activities, specifically galleries, ateliers and innovation businesses (start-up type). On the ground floor there will be built and non built zones (passages below the new building, see “ground level exterior covered area” zones on figure below).
b. 80% of the floor’s useful area will be dedicated for private apartments, 60% one bedroom and 40% two bedrooms.

c. 20% of the floors useful area will be dedicated for co-living spaces, organized in independent living units of maximum 35m^2, and supporting common services and living areas:

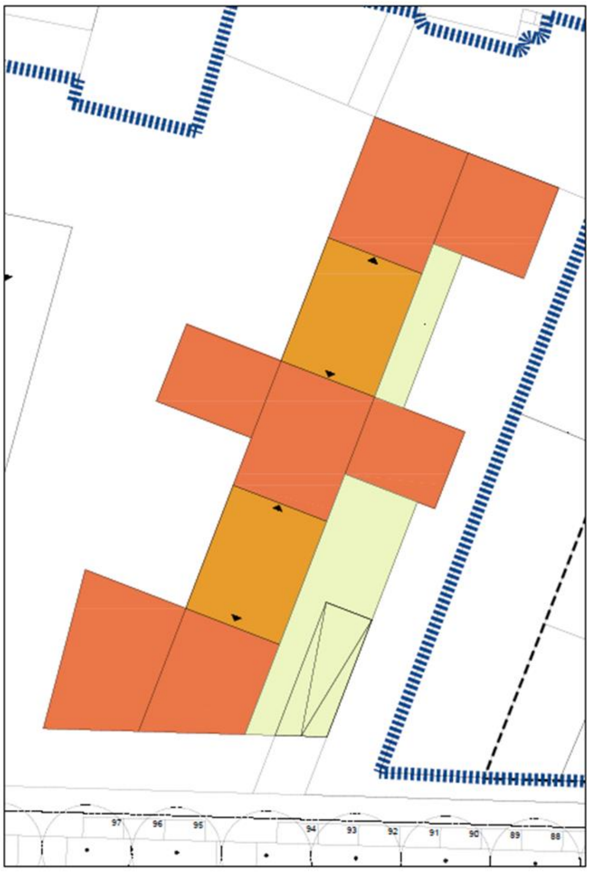
   1. Living units should include living area, sleeping area, kitchenette, bathroom and storage.
   2. Common areas should include laundry, bike room, chilling and enjoyment area, common bathroom, other common use services.

Underground parking is planned under the building, allowing two parking levels.

The planned building gross construction area <u>above ground</u> is 6.627m^2, in 7 floor levels, and the maximum façade height is 26,20m. The minimum gross area to be considered is 80% of the mentioned total available area.

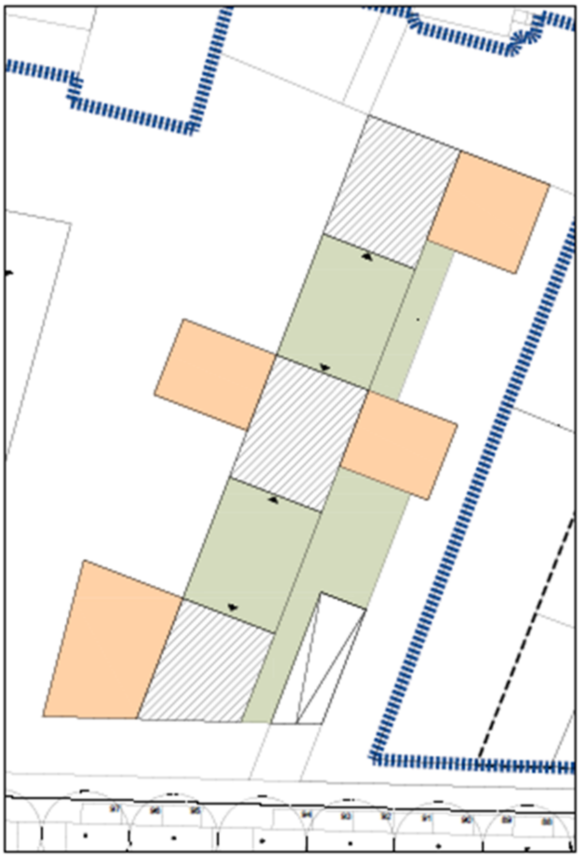


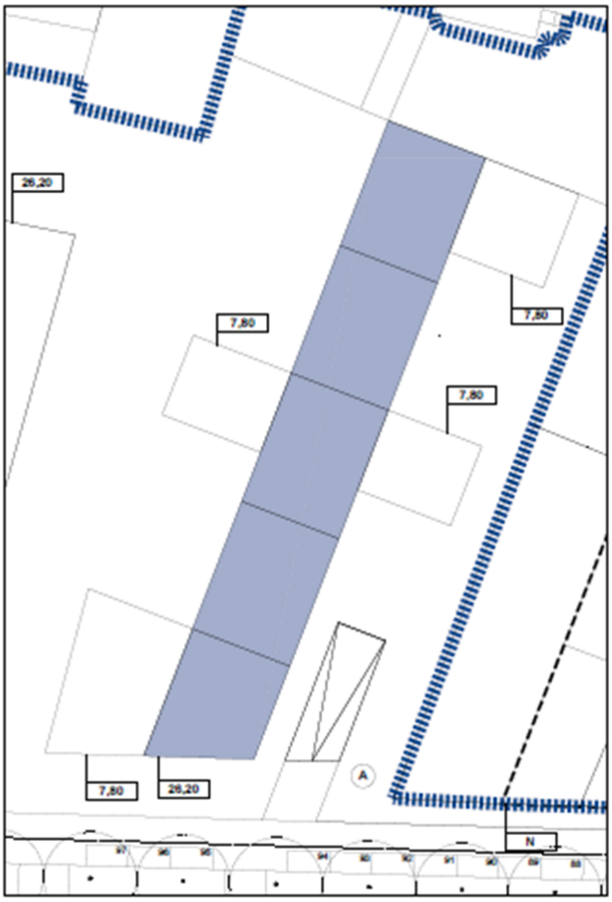
underground level construction limit



ground level construction limit

ground level exterior covered area





ground floor private construction areas

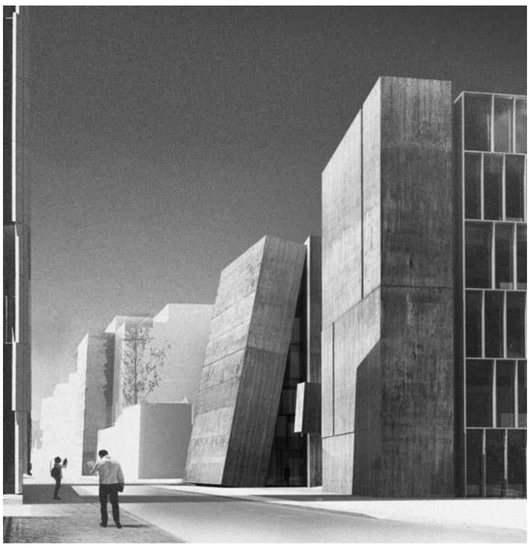
ground floor private construction areas - commerce

ground floor private areas with public use

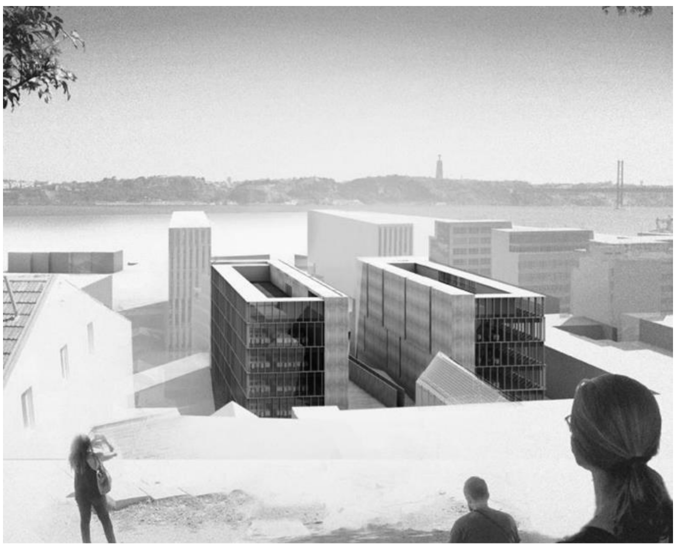
access to building

upper floors implantation limit

0,00 facade maximum height



In 'https://espacodearquitetura.com/noticias/edp-revela-projecto-de-premio-pritzker-chileno-para-lisboa/'



In 'https://espacodearquitetura.com/noticias/edp-revela-projecto-de-premio-pritzker-chileno-para-lisboa/'

External views of new building EDP II under construction on west side of Building B (zone P2.11)

EXTERIOR AREA C

The exterior area should be designed in a way that answers to some requirements:

a. Allow the interconnection between the two buildings and the surrounding streets, creating routes for pedestrian circulation
b. Allow for resting and enjoyment zones, supporting the residents and passing people
c. Maximize the green coverage, minimizing the ground waterproofing
d. Assure the pedestrian connection with Boavista street, on the north side of the plot, crossing the arch existing in the building along this street.

4. TYPE OF CONSTRUCTION, TECHNICAL PARAMETERS

A. Thermal comfort

Overheating – in order to provide a good environment, the proposed target for the summer comfort is that the overheating (temperature above 25^{0}C) measured as % from the total period is below 10%. In order to achieve these values students will integrate both passive measures (e.g. sun shading, light colors for exterior surfaces, green roofs and facades…) and active measures (e.g. ventilation) but *without air conditioning*.

B. Acoustic comfort

Walls:

- $D_{nt,\,w}$ + C Airborne sound insulation between living units ≥ 58 dB between living units and ≥ 45 dB within living units

Floors/slabs:

- $L'_{nt,\,w}$ + C Impact sound insulation ≤ 45 dB between living units and ≤ 50 dB within living units

The participants are advised to analyze also the level of noise generated by the technical equipment (such as HVAC) and if necessary to propose solutions to reduce it (sound insulated HVAC ducts, sound absorbers installed on the ducts).

C. Indoor air quality

In order to provide the best indoor conditions for the inhabitants, low levels of CO_2 concentrations (maximum 1000 ppm) inside the apartments should be achieved. To reach this low CO_2 concentration, the design should guarantee a minimum ventilation rate of 30 cubic meter per hour per person.

D. Fire safety

All products in the façades and the roof should be made of non-combustible materials.

E. Natural daylight

A minimum level of natural light is necessary to achieve a good quality of life. Therefore, in the rooms, a natural daylight autonomy of 60% should be achieved. The windows/floor surface ratio should not be lower than 1/8.

F. Carbon emissions & Energy consumption

The building shall be designed to be highly energy efficient. At least, the following minimum levels of performance shall be achieved:

- Annual energy demand for heating < 15 kWh/m^2
- U value for roof < 0,15 W/m^{2}K
- U value for external wall < 0,20 W/m^{2}K
- U value for floors on the ground < 0,30 W/m^{2}K

- U value for windows < 0,90 W/m²K
- Air tightness n_{50} < 0,6 1/h

The building shouldn't use air conditioning equipment.

A particular attention shall be paid to the embodied carbon[1]. A calculation of the carbon emissions over the whole building life cycle shall be carried out with the tool provided for free during the competition by OneClick'LCA. Students will explain how they have been able to reduce/optimize the embodied carbon while progressing in their project design.

G. Resources & circularity

Over its whole life cycle, a circular building minimizes the use of primary non-renewable raw materials and the generation of non-valorized waste. To achieve those two overarching goals on primary raw materials and valorized waste, the following five points shall be taken into account:

1. A circular building shall be designed for longevity: it shall be flexible in use and easily adaptable over time, possibly allowing for usage reorientation; and it shall be made of durable and resource efficient materials, products and systems, easy to repair, maintain or replace and to reuse or recycle at their end of life;
2. Resource efficient materials, products, systems are made with a minimum use of non-renewable primary raw materials; they shall incorporate a maximum share of recycled or renewable raw materials; their installation shall generate a minimum amount of waste; regarding the valorization at their end of life, reuse shall be the preferred option followed by recycling; to be easy to reuse or recycle, systems shall be easy to dismantle and components easy to sort out; and products and materials shouldn't reduce exposure to hazardous substances to avoid their further dissemination in the built environment. All jobsite and deconstruction waste shall be valorized. Off-site prefabricated building elements, modular construction and lightweight systems (in particular for facades and internal partitions) belong to the solutions that allow to meet these criteria.
3. Renovation and extension of existing buildings shall be preferred over demolition/deconstruction and new built;
4. Selective deconstruction shall always be preferred over demolition at buildings' end of life; to facilitate the deconstruction and the valorization of the waste, a detailed inventory shall be kept over time of all materials, products and systems used to build, maintain and renovate the building, and of their composition; a building material passport (logbook) shall be attached to the building (from the design stage until the building's end of life);
5. To support the choice of alternative options, decisions shall be based according to their actual environmental impacts at building level; those impacts shall be calculated over the entire life cycle of the building (LCA at building level).

In this contest, it is expected that students will pay particular attention to the above first 2 points (design for longevity and resource efficient solutions).

[1] *Carbon emissions associated with materials and construction processes throughout the whole lifecycle of a building or infrastructure. Embodied carbon therefore includes: material extraction (module A1), transport to manufacturer (A2), manufacturing (A3), transport to site (A4), construction (A5), use phase (B1, but excluding operational carbon), maintenance (B2), repair (B3), replacement (B4), refurbishment (B5), deconstruction (C1), transport to end of life facilities (C2), processing (C3), disposal (C4).*

5. COMPETITION REQUIREMENTS

Participants should answer to the following requirements:

MASTER PLAN

- Basic representation of the External Area C, at scale 1:500, including Building B implantation, providing the understanding of general organization of the Project proposal.
- Relevant details of specific areas should be provided.
- Visualization of the experience of living in the analyzed areas -Views, 3D perspectives and/or photographs of physical models as seen fit by the participants to better explain their proposal.

BUILDING A

- Development of architectural proposal, <u>at the level of draft</u>, for the proposed design program for the intended use.
- Floor plans, elevations, relevant sections that can allow to understand the proposal, at scale 1:200.
- Short description of project options and renovation solutions to be implemented, with focus on the specific technical solutions for the specific services.
- Few 3D views to help the understanding of design proposal.

BUILDING B

- Development of architectural proposal, for the proposed design program for the intended use.
- Floor plans, elevations, relevant sections that can allow to understand the proposal, at scale 1:200.
- Technical details at scale 1:20 or otherwise convenient for adequate understanding.
- 3D views to help the understanding of design proposal.
- A life cycle analysis should be done at building level, using available tool (One Click LCA).
- Calculations for energy efficiency, that can be done using PHPP or any other tools.
- **B**eside the minimum requirements, participants are expected to provide sufficient information to allow the jury members to analyse:
    - Design concept and functional solution
    - Low carbon energy supply: solutions such as locally produced renewable energies (geothermal, photovoltaic) or heat pump might be appreciated.
    - Strategy to achieve low embodied carbon construction; e.g. lightweight constructions, wood construction, product reuse…
    - Strategy to optimize resource efficiency and minimize construction waste; e.g. lightweight constructions, prefabricated elements, modular construction, recycled or bio sourced content, etc.
    - Strategy to achieve thermal comfort; e.g.: performance of the building envelope (insulation and airtightness), HVAC system, sun shading measures, ventilation, etc.
    - Strategy to achieve acoustic comfort; e.g.: Constructions Rw, main measures for sound protection from technical and traffic noise, etc.
    - Strategy to achieve an excellent indoor air quality; e.g. air renewal with mechanical or natural ventilation, selection of low emissive products, active products to capture VOCs and formaldehyde, moisture management…
    - Fire safety strategy; e.g. evacuation paths, fire barriers, material selection (reaction to fire), system selection (fire resistance), etc.
    - Natural daylight strategy; e.g. size and orientation of windows, high performance glazing products…

- Strategy for social comfort, privacy in terms of space and rooms layout, given the possible pandemic context

In order to explain the requirements mentioned above, the participants can present: Exterior/Interior 3Ds, text, diagrams, calculations, drawings or information as they seem fit.

6. JUDGING CRITERIA

Sustainability with its economic, ecologic and social aspects is a key part of all the criteria mentioned below and will be taken into account at all levels of evaluation.

- **ARCHITECTURE: 50%**

  Design excellence, functional concept and regional aspects, layout.

- **TECHNICAL CRITERIA: 20%**

  Constructions comply with the Saint-Gobain criteria (carbon & energy, resources & circularity, health & wellbeing) as well as with the fire safety requirements.

- **CONSTRUCTION DETAILS: 20%**

  Quality and consistency of the proposed construction details with regards to building physics (thermal and acoustic bridges, airtightness and moisture management).

- **PRODUCTS USAGE: 10%**

  Correct usage and mentioning of Saint-Gobain products and solutions in the project.

ARCHITECTURE
STUDENT
CONTEST

SAINT-GOBAIN