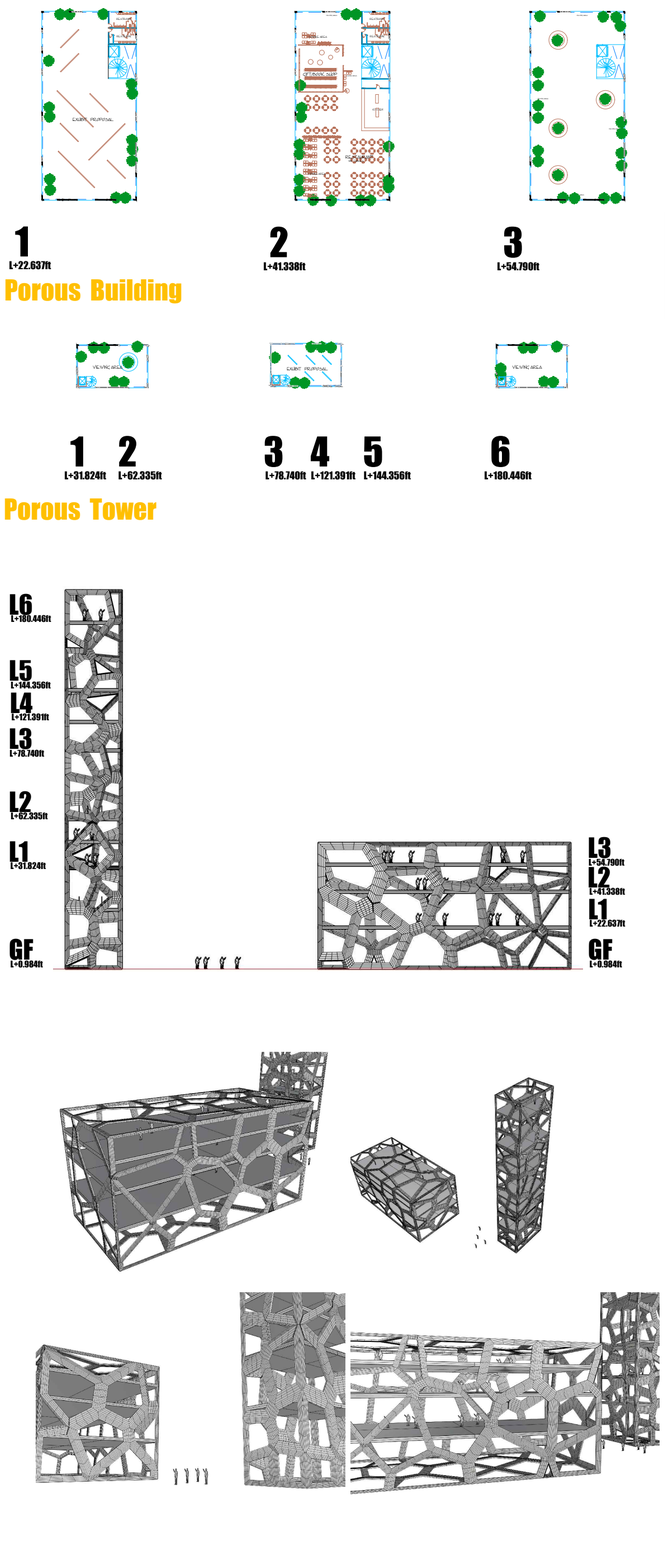
POROUS STRUCTURES

URBAN CONFLUENCE
international competition

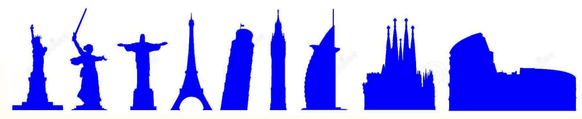
... it is at the landmark where we know, we recognize
and we rethink our direction, speed and existence ...
Arnold Geulinex



Porous structures

A landmark is built through time in the imaginary referent of its inhabitants and visitors when it forms a referent that the community uses for its displacements and people use it as an identifying element of a space or a city. An element of the landscape built through simple, basic forms that allow generating that reference in the mind,

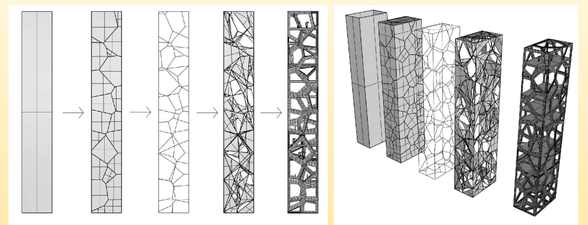
The various landmarks that have been carried out through the time, and that have been accepted by society as a reference, are basic elements and figures, which achieves an identification of the site, or city where it is located, generating that desired reference.



The location of the 2 POROUS facilities is the result of an analysis of flows between the various buildings in the environment.

Our proposal is a rectangular element that, using a voronoi mathematical geometry and boolean operations of substance, generates a figure with a clear and strong aesthetic, which generates an impact on the users of the place. An envelope is achieved .... and allows us to house the most diverse activities inside, using open and flexible spaces that allow for the most varied uses or activities that are required.

Inside, open spaces that allow the multifunctionality required for the various current activities, with basic storage, toilet, elevator and communication stairs between the various levels. At all levels, it allows observation and enjoyment of the views of the exterior landscape.



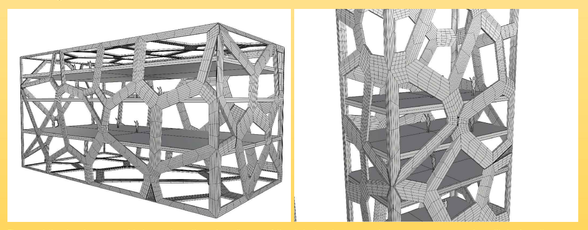
Envelope & Skin

Envelope structure generated using parametric software to optimize its form, and subsequent manufacture. Its shape is optimized through several hundred alternatives seeking the optimization of the proposed system, until an optimization of the structure is obtained, in this case a simple rectangular volume with voronoi substracted spaces, results a lightweight and self-supporting three-dimensional structure, avoiding the need for intermediate columns that limit the design and interior layout.

The skin of our design not only serves to enhance the aesthetic value of the building, but it also reduces our impact on the natural environment by taking advantage of passive technologies such as solar shading and natural day lighting.

Our interior intrigues the visitor with interesting juxtapositions and connections through the design of inseparable public spaces and programs trough a series of interconnected voids to allow the penetration of natural light and natural ventilation.

Activities are organized along the fluid public space where all the functions are integrated and connected while maintaining their independence.



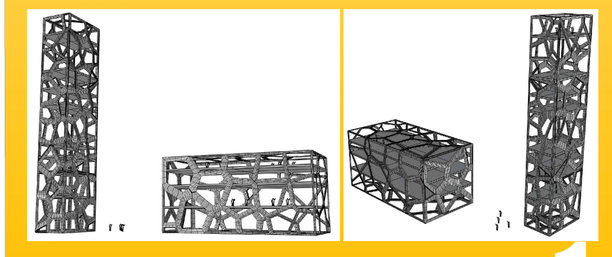
The architectural proposal is based on the cleanliness of the interior, to generate open spaces and multiple functions, flexible, non-static, where with few resources and adaptations it can be used and operated for the most various uses within these spaces, and as the building and the functions within these facilities evolve over time, they can continue adapting without any problem.

Circulation cores and emergency exits to achieve a separation of the various uses that the POROUS facilities will house, accesses and entrances independent and controlled, depending on the function.

On the outside and to generate more interior space without overloading the current structure, envelopes were designed, These envelopes achieve a broad, free and transparent structure, at the same time protect from the outside and allow a natural lighting, which contributes to the reduction of the expense and energy consumption of the building.

Generates an urban landmark in this environment, managing to create an element of reference in the imaginary collective of the users.

The skin is used also to filters and allows the reach of natural light to the interior. And using color LED ligths on the edges enhance highlighting the shape of the volumes



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... the landscape is a reflection of
the way of thinking of a community ...
Jane Jacobs

Urban context

An open space, a square, is proposed near the porous tower, which allows fans to attend a sporting or musical event at the SAP Center, as well as a meeting or outdoor event, a place for meeting and recreation, protected from vehicular traffic and city noise.

The activities and spaces currently found and carried out on the site are respected, adding and enhancing the public space with various activities that allow integration and social cohesion between users and visitors to the site.

Weaver´s gift
Five skaters, reflective pool, pillars, metal stand
San Jose Vietnam Memorial
Rangers station
Tributaries Monument
Guadalupe River trail
St. John street overlook plaza
GRPC satellite visitor center
Tennis court
Children carousel
Tot lot and playground

Oficial site map image

Flow path

Various flows are generated inside the area to be intervened, as a result of the different directions and number of users to size the interior corridors, using various pavements for their treatment, which allow a clear identification.
These interior corridors allow and generate various travel environments, between one point and another in the urban context.
The greatest number of trees existing on the site is respected, which does not alter the current status of the existing ecosystem, roads are integrated inside the site, which allows clear internal flows, which provoke a discovery of different situations and environments within the space public.

Energy & Sustainability

Structures designed to take advantage of and generate internal air circulation, which allows a low consumption of elecctricity and eliminates the need for large and expensive air conditioning equipment, thereby obtaining a comfortable indoor climate at a low cost.

Achieving Diamond Level EEWH certification, as well as LEED Platinum certification required special attention to the energy and carbon implications of our design. In regards to the interior climate, we have taken into consideration the different demands of comfort for various spaces throughout the building. We have divided the project into distinct zones.

The external skin of the structure was designed specifically to regulate the solar radiation and intensity of the building, further reducing the energy demand associated with cooling.

This skin makes use of diffuse radiation, a day lighting technique that optimizes the penetration of sunlight into the building, reducing the need for artificial lighting, and directly creating energy savings for both the electrical and internal load. While the external skin provides a generous amount of solar shading.

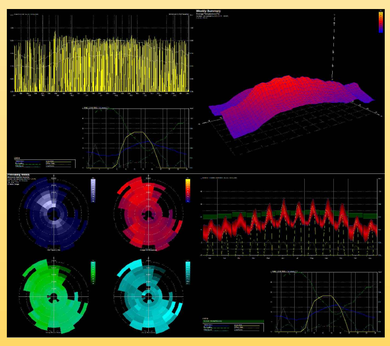
We have designed a high-performance building envelope, the passive design strategies that we have included for this project are balanced by the use of active systems that maximize renewable sources of energy. To meet the demand that has been reduced by the passive strategies.

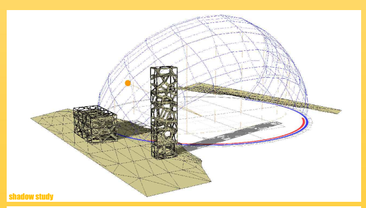
A solar battery storage system will collect excess thermal power to be used for powering the building at night. Using occupancy & vacancy sensors for the highly efficient lighting and ventilation installations allows our building to further limit the energy consumption associated with internal occupant comfort.

In order to enhance the social aspect of sustainability into our project, we wanted to design a facility that both educated and inspired the building's visitors. To do this, we have incorporated interactive behaviour-based efficiency measures into the facility.

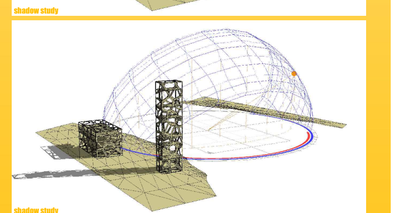
Specifically, we have designed a system located on the ground floor of the building that displays real-time feedback of the building's performance. The interactive screens display the current carbon intensity, energy consumption, energy production, and water use load of the building.

It is our intention that this experience encourages visitors to think about their own environmental performance beyond the duration of their visit. We are able to utilize this technology through our Intelligent Building System that uses smart metering to monitor, manage, and respond to the slightest variations of building performance, essentially making the building a living building.





shadow study



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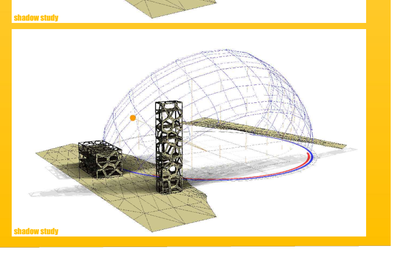
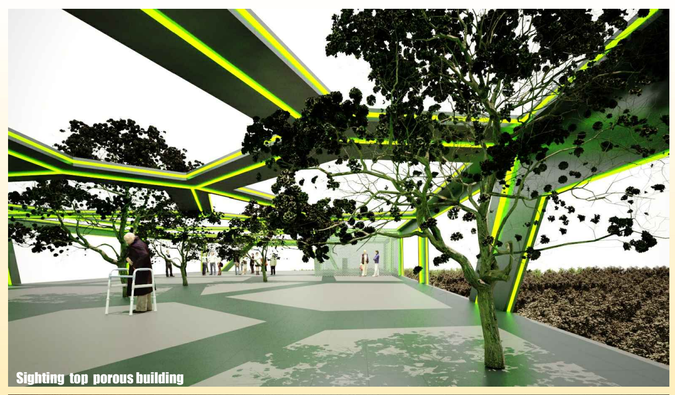


shadow study

Materials & Resources

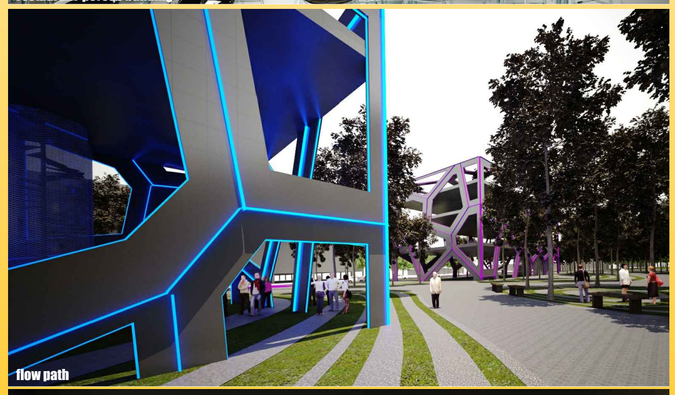
Our environmental selectivity minimizes resource consumption while maximizing closed-loop material lifecycles and recycled materials. Our strategy is to reduce material consumption per unit of service, decreasing the environmental impact of the material. We predominantly use rapidly renewable materials when they are natural and recycled materials when they are industrial.
Within the framework of technical and economic feasibility, we use 100% recycled and 100% recyclable materials such as: certified sustainable and recycled wood panelling (CLT wood), and steel in our structure, and using recycled aggregates from construction for structural concrete. We additionally incorporate locally sourced materials, and green building material label products for reduced environmental impact whenever possible.

The main structure, based on steel plate, fabricated using parametric software for the design of all the components of the structure, avoiding the possibility of errors in the manufacture of parts, facilitating the programming, manufacturing, handling, transport and assembly of all the components of the porous structures of the project.

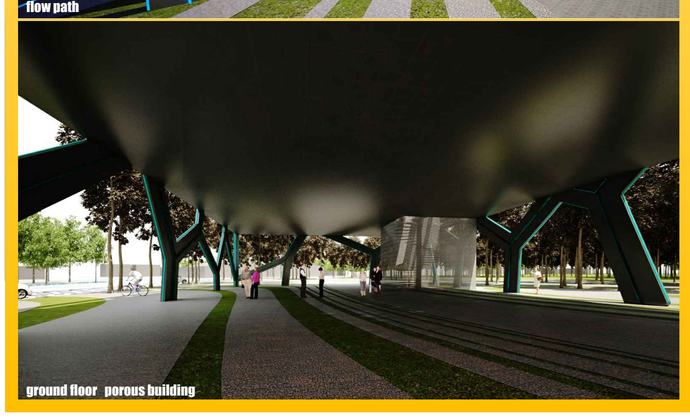


Sighting top porous building

restaurant porous building



flow path



ground floor porous building

open square

aerial view

section