Urban Remediation And Civic Infrastructure Hub

Centro de Acção Social por Música

Grotão, Paraisópolis
São Paulo Brazil

Paraisópolis is an area that began to develop in the 1920s due to a challenging topography of rivers. For this reason, regular streets and infrastructure were not implemented. In the 1960s, the neighboring area of Morumbi began to develop, and the construction labor force began to naturally occupy the area. Before this urbanization, the area was mainly agricultural. In the 1970s, a new zoning law discouraged legal development in the area due to prohibitive lot sizes, and as a result, there was a lot of informal occupation in Paraisópolis.

Despite its central urban location, the marginalized area of Grotão within Paraisópolis is effectively separated from the formal city. Within this isolated zone, increased erosion and dangerous mudslides have designated the site as one of many high-risk zones in the city. The project’s priority is to introduce social programs where they were once categorically neglected. Localized moments of this program, which includes sports facilities, urban agriculture, public space, transportation infrastructure, replacement housing, and the Fábrica de Música, are simultaneously connected to all boundaries of the area by the landscape of activated terraces.

The lower zone of the site contains the Fábrica de Música, which acts as a programmatic node to activate the site potential. These include public transportation, sports facilities, and the music school, which contains practice and rehearsal spaces, studios, a performance hall, and auxiliary classrooms. This is a vital catalyst to re-energize existing areas and infill programs into the fabric while forming a new network that connects the public from all levels of society.

The upper zone contains new replacement housing for those displaced from high-risk zones. Commercial spaces are introduced on the first level as an economic vehicle that activates the street level and stimulates the micro-economy of the urban agriculture on site.

The project proposes that architects eschew their conventional role in traditional hierarchies to serve as an enabling connection between the opposing forces of top-down planning and bottom-up initiatives. By creating common ground for these two forces, we can eliminate divisiveness and generate productive interactions. The project is proposed as a change agent to introduce a society’s need for equal access to housing, employment, technology, services, education, and environmental rights for all city dwellers in new spatial solutions.
Project Catalysts:

High-Risk Zone

Increased erosion, ongoing mudslides, steep slopes, and inefficient stormwater drainage systems have categorized Grotão as a High-Risk zone. These areas that are deemed unfit to build and are therefore in need of innovative and imaginative solutions. There are many similar sites, not only in São Paulo, but also in cities throughout the world. It is imperative that solutions and prototypes are developed to address questions of ecological sustainability, social sustainability, and safety in these areas.

The poor topographical conditions are intensified by Brazil’s climate. Harsh rains during the 6 month wet season transform the base of the site into a water basin. With no outlet, the water sits stagnant at the bottom of the steep topography, creating a floodplain. In addition, the top 5 meters of ground covering is comprised of garbage and sand, making it exceptionally difficult to build. Due to massive rains, mudslides, and floods, this site has become a void. In order to transform this space from a dangerous garbage dump, the critical risks must be understood and the site must be stabilized.

Lack of Public Space

There is a fundamental disparity between the built and unbuilt space in Paraisópolis, specifically within Grotão, where lot lines and a road grid were never planned due to the area’s difficult terrain. This has allowed for an extremely informal occupation of land. All buildable land has been coated with housing, leaving only the minimal space need for circulation uncovered. The winding streets and narrow footpaths present the only public moments within the neighborhood. With no public space, these congested pathways provide the only gathering points.

Due to rapid urbanization and challenging topography, the necessary social infrastructure and equipment were not incorporated into the development of the community. While small-scale commercial ventures exist, there is minimal social infrastructure found in the dense Paraisópolis fabric. While this development has led to a strong cultural identity, and to the informal occupation of land, it is difficult to imagine the possibilities of the neighborhood to accommodate the residence.

Lack of Social Infrastructure

Gustavo Dudamel conducts the FESNOJ IV Youth Orchestra in an informal settlement. This demonstrates both the lack of necessary social infrastructure as well as the importance that music brings to the neighborhood.

Soil Type

C1 (Top Layer of Soil)

Strength Type: Mohr-Coulomb
Unsaturated Unit Weight: 18 kN/m³
Saturated Unit Weight: 19.5 kN/m³
Cohesion: 10 kPa
Friction Angle: 20 degrees
Water Surface: Water Table
Custom Hu Value: 1

C2

Strength Type: Mohr-Coulomb
Unsaturated Unit Weight: 19.5 kN/m³
Saturated Unit Weight: 20 kN/m³
Cohesion: 10 kPa
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu Value: 1

C3

Strength Type: Mohr-Coulomb
Unsaturated Unit Weight: 19.5 kN/m³
Saturated Unit Weight: 20 kN/m³
Cohesion: 10 kPa
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu Value: 1

C4

Strength Type: Mohr-Coulomb
Unsaturated Unit Weight: 20 kN/m³
Saturated Unit Weight: 20 kN/m³
Cohesion: 10 kPa
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu Value: 1
Project Components:

Ethical Standards and Social Equity

The project addresses the definitional and conceptual boundary between social sustainability and ecological sustainability, and the recognition of the dynamic interdependence in the process of both social and ecological sustainability. The approach is based on the recognition that the process of social sustainability is fundamentally a social one, and that ecological sustainability is fundamentally a biological one. The latter is process-based and can be transferred to other areas of the world. The former is process-based and can be transferred to other areas of the world.

Project Components:

Centro de Acção Social por Música   |  Fabrica De Musica  |  Grotao, Paraisopolis  |  Sao Paulo, Brazil  |  Urban-Think Tank

Environmental Quality and Resource Efficiency

The project includes a site orientation to provide a combination of both public and block space, for maximum efficiency, and can also be adapted to other urban contexts. The public space is designed to allow for maximum efficiency, and can also be adapted to other urban contexts. The public space is designed to allow for maximum efficiency, and can also be adapted to other urban contexts.

Contextual and Aesthetic Impact

The new terrace system combines maximum physical infrastructure in social and educational programs, providing space for flexible and adaptable program. The terrace system also includes important connections to the surrounding neighborhood, including green spaces for social sustainability and ecological sustainability. The terrace system also includes important connections to the surrounding neighborhood, including green spaces for social sustainability and ecological sustainability.

Economic Performance and Compatibility

The program of the project is flexible and able to adapt to urban challenges. The program is flexible and able to adapt to urban challenges. The program is flexible and able to adapt to urban challenges.

Innovation and Transferability

The comprehensive system of social infrastructure public space, active and passive building techniques, and social and cultural activities is transferred to other urban contexts. The comprehensive system of social infrastructure public space, active and passive building techniques, and social and cultural activities is transferred to other urban contexts.

Integration/Connections

Public Elevator

The building includes one public elevator that provides access to all levels in the building, and terraces (25 meter height difference).

Site Access

Access to the site is provided by two roads, one at the top of the hill and the other at the bottom. The lower street adjacent to the building contains a back stop and turnaround. Public circulation is then directed up the hill via the public elevator and bridge connections.

Environmental Quality and Resource Efficiency

The wetland system provides a passive filtration system for water re-use on-site. The wetland system provides a passive filtration system for water re-use on-site. The wetland system provides a passive filtration system for water re-use on-site.

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Landscape and Urban Agriculture:
The Fabrica de Música and urban landscape act as one building, each one interacting with the other to form a comprehensive whole.

- Grass
  - Highly permeable grass is used to retain the slope of the site, absorb excess stormwater and reduce the required construction on site.

- Grass Pavers
  - Permeable material to mitigate runoff and erosion.

- Agriculture
  - Introduces fresh produce, agricultural education, and micro economies into the favela.

- Wetlands
  - Passively filter rainwater for gray water applications and irrigation for agriculture.

Landscape Circulation:

- Terrace Integration
  - The terrace system ties into existing pathways in the favela to re-integrate the context throughout the empty void.

- Terrace Integration
  - The terrace system continues into the Fabrica de Música through a series of bridges, tying the building to the landscape. This circulation network is also connected to the public elevator and stair system within the building.

- Bridge
  - A landscape accessible public ramp provides access throughout the entire site and moves the landscape into and through the Fabrica de Música.

- Terrace and Terrace
  - The terrace on the 200 level forms an intermediate space that continues into the building. The music school is simultaneously building and landscape.
Water Model:

- Solar Water Flow
- Burnoff Water Flow
- Burnoff collects over pervious surfaces, deciduous trees, and porous concrete.
- The flow controls the water in the reservoirs for discharge.
- Heat storage for local climate optimization.
- The water is used for cooling during the day and for heating during the night.
- The cooling water is discharged to the public sewer.

Building Systems:

- Natural Ventilation chimney
- Combination of stack, solar, and wind-supported ventilation system.
- Hybrid Photovoltaic Panels
- Daylight for the day and cooling the water for the active slab by night.
- Producing electricity by the photovoltaic elements at the top of the building.
- These hybrid (photovoltaic and thermal) collectors have a dual purpose: to act as a thermal storage.
- At night, the water is cooled by active slabs.
- Water is fed into the dry periods to provide irrigation to the planted areas.
- Plant is available for non-foodable uses, such as artistic framing.
- Chilled water is discharged to the public sewer.

Climate Concept:

- Climate Concept: The Climate in Sao Paulo is hot and humid for a long period. Due to the location of Sao Paulo, the sun enters the chimney at a steep angle in summer. The chimney is driven by the sun and provided by the wind. At the same time, the heat is rejected from the chimney.
- Cross Ventilation: Wind from south direction provides fresh air, while warm air is carried out by the chimney.
- Air Conditioner: IR-Emission of water during the night is rejected by the chimney.
Facade Concept:

An innovation concept is one that can be transposed into a sustainable product or production methodology. In some cases, that concept is translatable into a variety of products and architectural projects. The facade of the Fábrica da Música provides both innovation and transferability of facade and deep through refining the cladding system. As needed, multi-functional, multi-material, multi-functional, this will enable the multiple functionalities by operating the building structure into a smart building situation that can be programmed with a variety of smart technologies supporting bricks. These elements, both clad and unclad, will perform multiple functions, and control elements to meet single multi-functional walls. The blocks and can be taken out fairly by introducing a concrete sandwich with insulation core, the block can be used with a variety of plug-in options supporting bricks. These elements can be divided into different functions, each brick is flexible and interlocking, resulting in an economically efficient building system. The infill of each brick will be demand driven and will perform as simple light redirecting elements, sun shading elements, or even simple ventilation units. This provides a highly performative wall element that can be subdivided into different functions. Each brick is flexible and interlocking, resulting in an economically efficient building system. The infill of each brick will be demand driven and will perform as simple light redirecting elements, sun shading elements, or even simple ventilation units. This provides a highly performative wall element that can be subdivided into different functions. Each brick is flexible and interlocking, resulting in an economically efficient building system. 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Landmark Building:

The Grotao Project shall also act as a landmark project, serving as an innovative example of a sustainable and comfortable building. The concrete blocks and the solar chimney are smart and robust elements, providing a comfortable climate with the help of sun and wind. This means, improving the indoor climate and minimizing energy demand. These elements are reproducible for future buildings around the project and other places, adapting the concept to the local conditions.

Over the year, the building produces more energy by photovoltaic than it consumes. The hybrid collectors covering the roof will produce ~140,000 kWh/a. The excess energy can be used by the surrounding buildings.
The Grotto Project is a very important part of the Park’s overall concept and we completely support it. Having been a witness to Jesus’ Time in the development of this project over the last few years, I can certify that design is efficient and implemented, leaving an innovative aspect to sustainable design.

It is important that they open up on a high-waterproofing level, with a form dedicated to underground parking, and a new community space and practice, which satisfies our housing policy in the city. It can make, among others, new strategies, built policies and standards for city, the project has moved forward to realization. Sustainability has been a guiding principle in the design and this building challenges the users. The Grotto Project (Urban Tone) aims at a closely woven to environmental sustainability and the urban experience.

I highly recommend the Grotto Project without hesitation as the project that aids around the local community as part of a programme that could be expanded across the world. RTI through a series of seminar and the 15th project in the global network clearly demonstrates that the Music Centre project is already surrounding the most sustainable urban technology in Brazil and would be highly beneficial to the people of the city and context.

Each location would provide the perfect setting for hundreds of people. From practical amenities to engage with music and enjoy an ecological lifestyle, it would be a great addition to its city and context. From an environmental perspective, each location would be a great addition to the city and context. From an environmental perspective, each location would provide the perfect setting for hundreds of people.

I would be happy to present more information regarding the project and its plans that can also be found in the website. If necessary, I can be contacted via email at info@urban-tonetone.com.br.

Grotto Project

São Paulo, São Paulo, Brazil

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