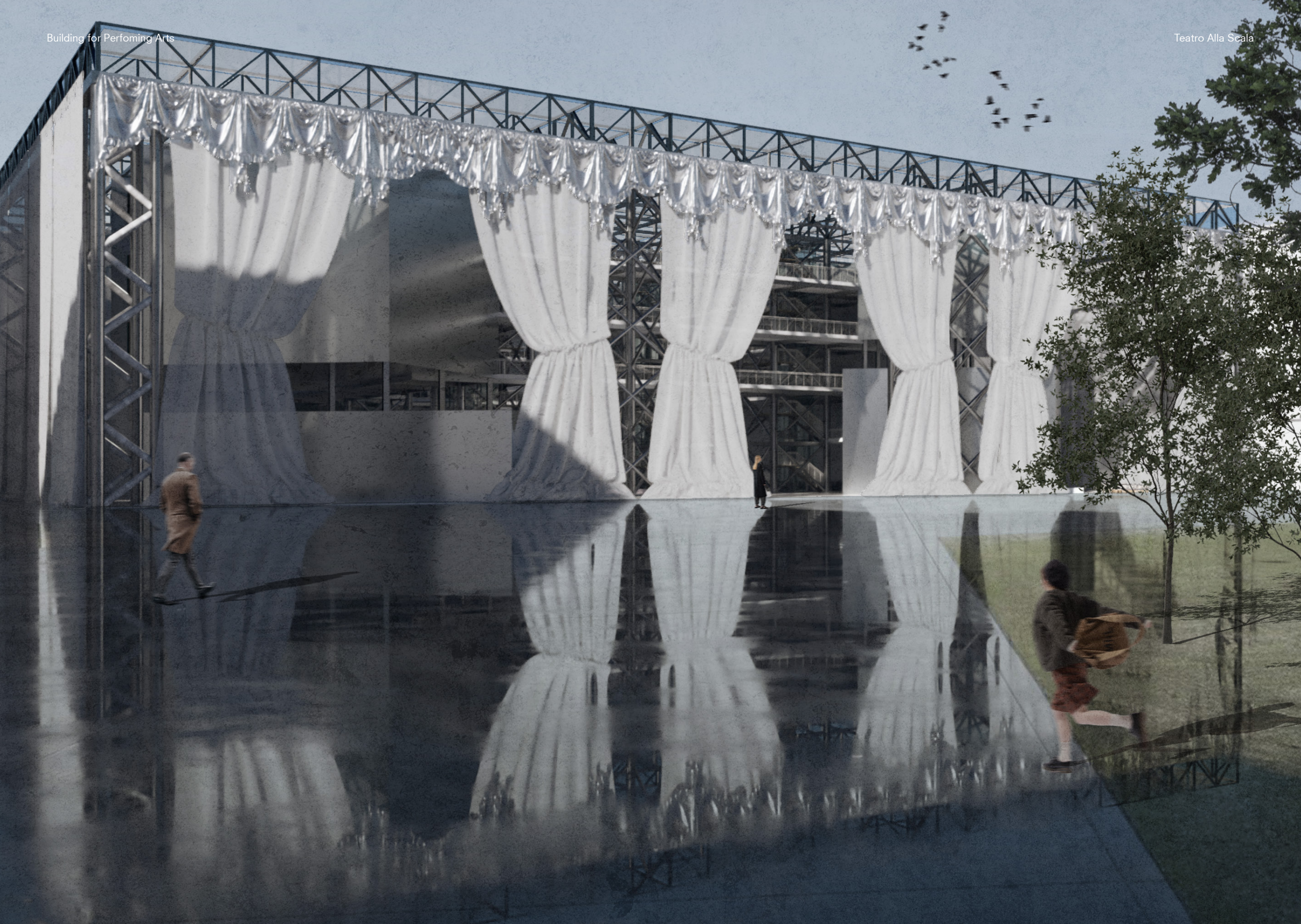


LET'S PLAY OPERA

Teatro Alla Scala as a Field of Performance and Participation





ABSTRACT

Opera houses have traditionally been perceived as elite cultural institutions associated with prestige, exclusivity, and formal social rituals. However, in the Information Age, cultural consumption is increasingly driven by participation, freedom of choice, and empowerment rather than status. Contemporary audiences seek opportunities to engage with culture rather than consume it passively.

This project investigates how the opera house can be reimagined to respond to these changing expectations through the case of Teatro alla Scala in Milan. Drawing on architectural theory, historical research, site analysis, client analysis, and case studies of contemporary theatres, the study explores strategies for increasing participation, accessibility and knowledge within classical music culture.

By restructuring traditional program and increasing building's permeability within the city, the project transforms the opera house from a singular performance venue into framework for cultural production and participation. Inspired by Cedric Price's Fun Palace, the proposal takes an experimental approach and positions classical musical performances as playful, open and accessible cultural practice embedded within everyday urban life.

Keywords: Opera, Performing Venues, La Scala, Fun Palace, Participatory Architecture

INDEX

TU Delft

COMPLEX PROJECTS

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01 INTRODUCTION

Buildings are shaped by bodies: by movement, scale, perception and comfort. At the same time, buildings shape bodies by structuring how people gather, circulate, see, and interact. In complex and functionally specific buildings, this reciprocal relationship becomes particularly visible.

The opera house represents one of examples of this body–building relationship. It coordinates performers, technicians, musicians, and audiences through carefully structured spatial systems: stage machinery, acoustics, sightlines, rehearsal infrastructures, circulation hierarchies, and front-of-house ceremonial sequences. It is both a technical machine and a cultural symbol.

As the society evolves, so do the expectations placed upon buildings. The opera house, historically rooted in hierarchy and monumentality, therefore becomes an important typology through which it is possible to examine how a 'One of Milan' can respond to contemporary social and cultural shifts.

PROBLEM STATEMENT

Opera Institutions function through a centralized production model that relies on intensive craftsmanship, complex technical coordination, and significant financial investment. The need for large orchestras, advanced stage technologies, ateliers, and rehearsal infrastructures often leads to structured management systems and carefully curated programming.

While this model supports the high quality and complexity of opera as an art form, it can also limit spatial and programmatic flexibility.

This cost-intensive nature of productions, along with operatic historic traditions, contributes to a perception of opera, ballet and orchestra as a very elitist form of art.

Due to recent architectural developments including an award winning Oslo Opera House by Snohetta built in 2008, access to opera buildings is increasing and the opera institutions are becoming more democratized. However engagement with the form of art itself often remains limited to attending performances, which adds a layer of restriction through expensive ticketing and scheduled programming.

Historically, opera architecture has reflected prevailing power structures - from dynastic authority to bourgeois hierarchy and later state-sponsored cultural identity. However, contemporary society - particularly in the information age - operates through more decentralized networks and increasingly values participation, inclusivity, and accessibility.

This shift suggests a growing mismatch between evolving cultural expectations

- especially among younger generations, who often associate music and theatre with empowerment, freedom and active engagement and the existing spatial and organizational frameworks of opera houses.

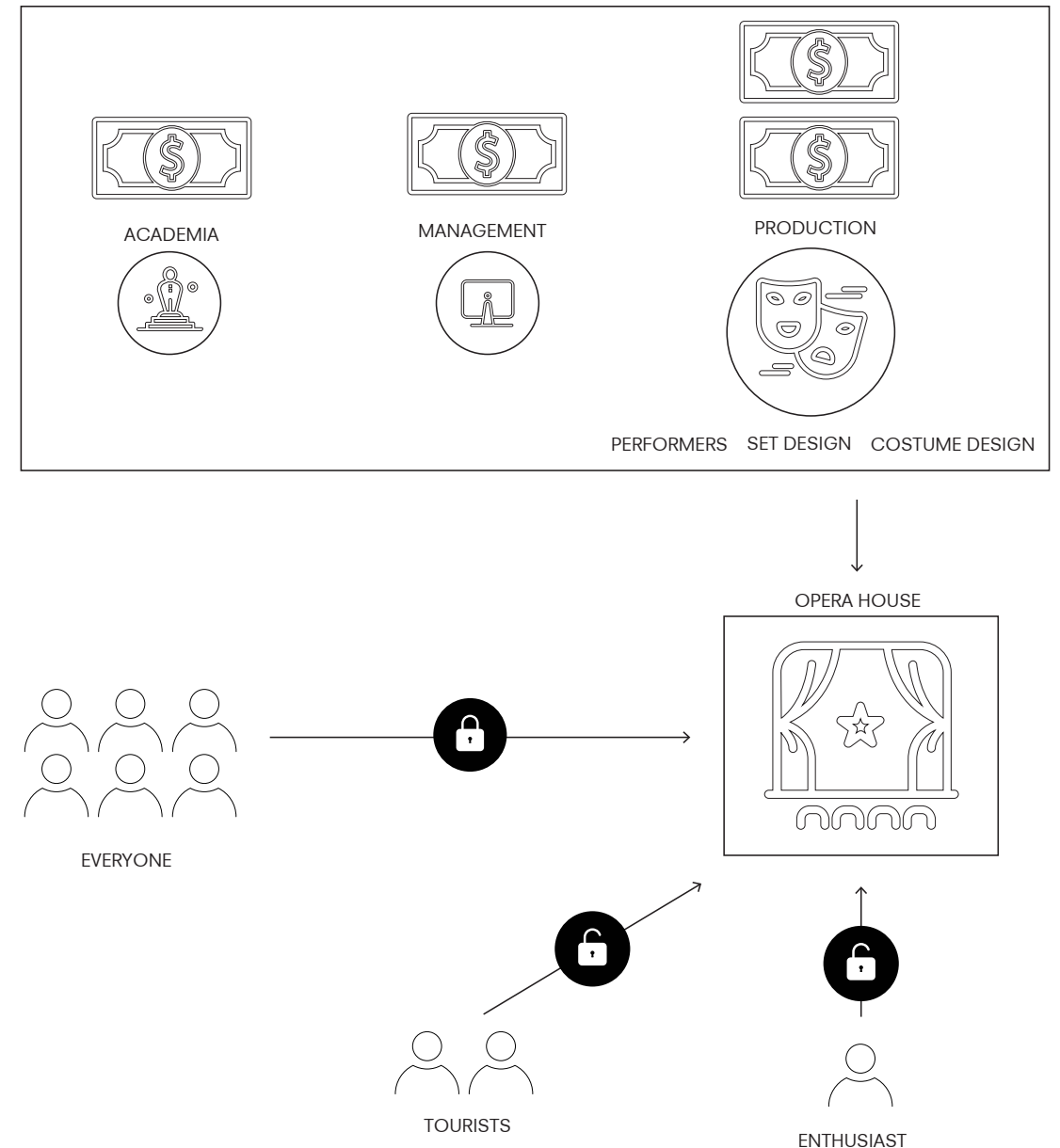
RELEVANCY OF THE PROBLEM

In the power structure of the information-age, authority is increasingly distributed through networks, platforms, and participatory systems. Cultural engagement is shaped by immediacy, interactivity, and accessibility. Individuals expect transparency, agency, and the ability to navigate and influence systems.

Within this context, the opera house does not have a position. Its architectural language may signal openness, yet its operational logic remains rooted in centralized expertise and curated authorship. As modes of cultural production and consumption evolve, the opera house faces the challenge of maintaining relevance without abandoning its technical and artistic integrity.

Milan presents a particularly significant context for this investigation. As a global capital of design, fashion, and creative production, the city operates through dynamic and interconnected cultural economies. At the same time, it is home to one of the most influential opera institutions in the world Foundation Alla Scala. Foundation Alla Scala is considered to be the motherland of operatic craftsmanship. The coexistence of historic cultural authority and contemporary creative dynamism positions of Milan as an ideal site in which to reimagine the opera house typology.

01 INTRODUCTION



01 INTRODUCTION

The question therefore extends beyond representation. It concerns how architecture can respond to shifting definitions of cultural value.

OBJECTIVE OF THE PROJECT

The project aims to situate itself within the institutional Network of Foundation alla Scala. The ambition is to develop a complementary and interconnected performing arts center that expands the institutional network through a more flexible and accessible spatial framework.

The project envisions a building that honors opera and ballet while presenting them in a less intimidating and more approachable manner.

It seeks to lower spatial and social barriers that often surround classical performance. The building design will aim to operate as a gateway - introducing people of Milan to opera through visibility of process, smaller-scale performances, educational programs, and experimental platforms.

It is envisioned that plot becomes a connector between institution and citizen of Milan. By decentralizing aspects of production and engagement, the project intends to aid La Scala to expand its reach of audience. The ambition is not to diminish artistic excellence but to expand access, by introducing participation, and relevance within information age society.

This ambition introduces cultural

empowerment as an architectural objective.

RESEARCH QUESTION

This thesis investigates the perceived exclusivity of opera within its urban and social context, and explores how this perception can be reconfigured through architectural design in the context of an information age society aiming to address the following primary research question:

“How can opera house design enable cultural empowerment within information age society?”

The question is investigating an analysis of the history and theory of the performing arts, alongside an examination of the characteristics of information age society. In addition, the research considers architectural precedents and spatial strategies that support cultural empowerment.

Within this study, cultural empowerment is understood through the lens of accessibility to participation and opportunities for learning and engagement.

Alongside the research question, three design questions have been formulated to provide a narrative to the topics: client, site, program. These questions are specific to the case study of Teatro Alla Scala

- What are the core values of La Scala Foundation?(network identity)

- How can the program of the building be a platform for empowerment?(informality and flexibility)

- How can the building weave citizens of Milan in from the Galleria and Piazza Alla Scala?(permeability)

SCOPE

The scope of this project is defined at the scale of a large public building situated in the city center of Milan. The project engages with the opera house as a complex cultural institution and as one of the city's significant public buildings.

The project focuses on the architectural design of an information age opera house that builds upon the institutional legacy of Foundation Alla Scala, without proposing an intervention within the existing historic building: Teatro Alla Scala but treating it as though it has never been built. The opera house is treated as a building type through which broader questions of public accessibility, cultural engagement, and architectural organization can be explored within a dense urban context.

The scope of the project is limited to the building scale, addressing spatial organization, circulation, programmatic relationships, and technical integration on the defined plot. Urban-scale planning, policy-making, and institutional restructuring lie outside the scope of this research and design, although it is taken into account within the research framework.



02

APPROACH

To answer the research question, it is essential to first examine existing theories and previous research in this field. Therefore, the theoretical framework will present and discuss key findings on the potential of cultural empowerment through the performing arts, as well as explore how these insights can be translated into architectural design strategies.

Subsequently, this chapter will outline the research methodology that informs and leads to the development of the design brief. The investigation is structured around three interconnected research topics: client, site, and program, which together form the foundation for the project's conceptual and spatial framework in the form of design brief.

02 APPROACH: THEORETICAL FRAMEWORK

OPERA PERFORMANCE VS ARCHITECTURE HISTORY

Opera originated in late sixteenth-century Italy within aristocratic court culture. Early works such as L'Orfeo by Claudio Monteverdi were composed for elite audiences and closely associated with dynastic celebration.

In the Baroque era, opera functioned as a crafted spectacle reinforcing political authority and cultural prestige. Architectural settings - often embedded within palaces expressed exclusivity and hierarchical order.

With the emergence of public opera houses in the eighteenth century, the typology expanded while maintaining social stratification. Institutions such as Teatro alla Scala embedded class divisions directly into spatial organization. The horseshoe auditorium, vertically stacked private boxes, and differentiated entrances reflected economic hierarchy. Access to prominent seating required significant financial means, making architectural form a visible representation of social order.

During the nineteenth-century Romantic period, opera became a dominant urban cultural institution. Monumental buildings such as the Palais Garnier embodied grandeur through ornamented interiors, ceremonial staircases, and ritualized foyers. The experience of attending opera became a social performance in itself, reinforcing bourgeois identity and national pride.

Following the Second World War, increased state funding repositioned opera houses as symbols of cultural continuity and national identity across Europe and North America. The typology evolved into a publicly supported monument of heritage and excellence.

In contemporary society, opera houses have adopted more democratic spatial strategies centered on accessibility, transparency, and urban integration. Thresholds between building and city soften, foyers open outward, and architecture signals civic inclusivity.

OPERA PRACTICES

From the 18th to mid-19th century, visiting an Italian opera house was as much a social and urban interaction as it was a musical event. Particularly in the 18th and 19th centuries, attending the opera was not defined by silent concentration or reverence toward the stage, but by visibility, encounter, and participation.

Opera houses functioned as **social theatres**. Audiences talked during performances, arrived late, moved between boxes, and treated the event as an extended evening ritual rather than a fixed spectacle. The architecture reinforced this: tiered boxes acted as semi-private rooms where elites displayed themselves to the city, while the auditorium became a space of mutual observation—people watched each other as much as the performance. Applause, shouting, and even disagreement were part of the experience, making opera a collective and reactive event.




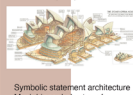

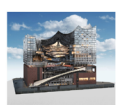
Interaction also extended beyond the performance itself. Foyers, staircases, cafés, and adjacent piazzas were essential spaces of encounter, where reputations were made, alliances formed, and cultural values negotiated. The opera house operated as an urban living room, tightly embedded in daily life.

Today, Italian opera is a formal and highly regulated experience.

Audiences are expected to arrive on time, remain seated, and maintain silence throughout the performance, with interaction largely reduced to applause at prescribed moments.

Performance, meaning, and legitimacy are confined to the auditorium, while foyers, circulation spaces, and public interfaces function mainly as transitional zones rather than spaces of encounter. During the intermission most people stay in the auditorium and wait for the second act while others take the opportunity to eat a snack and the return to the seat.

Architecture although shifted to a more democratic approach, rarely supports a gradual progression from everyday urban life toward operatic performance, instead demanding immediate attunement and readiness for focused listening.

Emergence 1500-1600	Baroque Opera 1600-1750	Classical Era Opera 1750- 820	Romantic Opera 1800-1900	Modern Opera 1900-2000	Contemporary Opera 2000-2025	Future Opera 2025-xx
<p>Private entertainment</p> <p>Mythology</p> <p>Representing ancient Greek drama revived.</p> <p>Court entertainment</p> <p>Themes of order, harmony, morality.</p>	<p>Aristocracy</p> <p>Opera used to impress people at private events</p> <p>Lavish Stage Spectacle</p>	<p>Human emotions, not just gods.</p> <p>Social critique (e.g., Figaro)</p> <p>Enlightenment values.</p> <p>Moral dilemmas, class conflict, religiosity vs desire.</p>	<p>Golden Age of Opera 1850-1950</p> <p>Big emotions & personal tragedies</p> <p>Love, death, rebellion, sacrifice, destiny.</p> <p>Nationalism (folk stories, national heroes) - opera becomes political.</p>	<p>Psychological depth</p> <p>Social alienation, war, trauma, modern life.</p> <p>Exoticism - new cultural settings.</p> <p>Expressionism, symbolism, abstraction.</p>	<p>Contemporary politics (migration, climate, surveillance).</p> <p>Identity, gender, race, diversity of voices.</p> <p>Re-telling classics with new interpretation</p> <p>Cross-disciplinary hybrids: film, digital art, performance art.</p>	<p>What should opera be about so that it can stay relevant across all of the other more popular entertainment mediums?</p> <p>Could it be that lack of education causing lack of relevancy?</p>
<p>Opera as the first "Mass Entertainment" first full sensory spectacle</p>	<p>Opera competes with bourgeois theatre & salons</p> <p>Opera survives by becoming more narrative and character-driven.</p>	<p>Opera big, but mass entertainment is rising.</p>	<p>Opera competes with cinema, as cinema becomes more accessible</p>	<p>Opera more for elite; musicals become mainstream.</p>	<p>With all the other entertainment opera becomes a niche</p>	
<p>Teatro Olimpico Andrea Palladio 1585 Vicenza, Italy</p>  <p>Reinterpretation of classical Roman</p> <p>Theatre with an semi-elliptical auditorium.</p> <p>Forced perspective to illusion of deep receding streets.</p> <p>Illusion of outdoor space</p>	<p>Teatro Alla Scala Andrea Palladio 1585 Vicenza, Italy</p> 	<p>Opéra Garnier Charles Garnier 1875 Paris, France</p>  <p>Grand and theatrical experience.</p> <p>Monumental staircase, rich ornamentation, grand foyer</p> <p>Separate circulation paths for audiences, performers and staff - smooth operation.</p>	<p>Sydney Opera House Jørn Utzon 1975 Sydney, Australia</p>  <p>Symbolic statement architecture</p> <p>Much bigger backstage for more technological production</p>	<p>Bayreuth Festspielhaus Richard Wagner 1876 Bayreuth, Germany</p>  <p>Darkened auditorium</p> <p>Hidden orchestra pit</p>	 <p>Opera shrinks for better intimacy</p>	



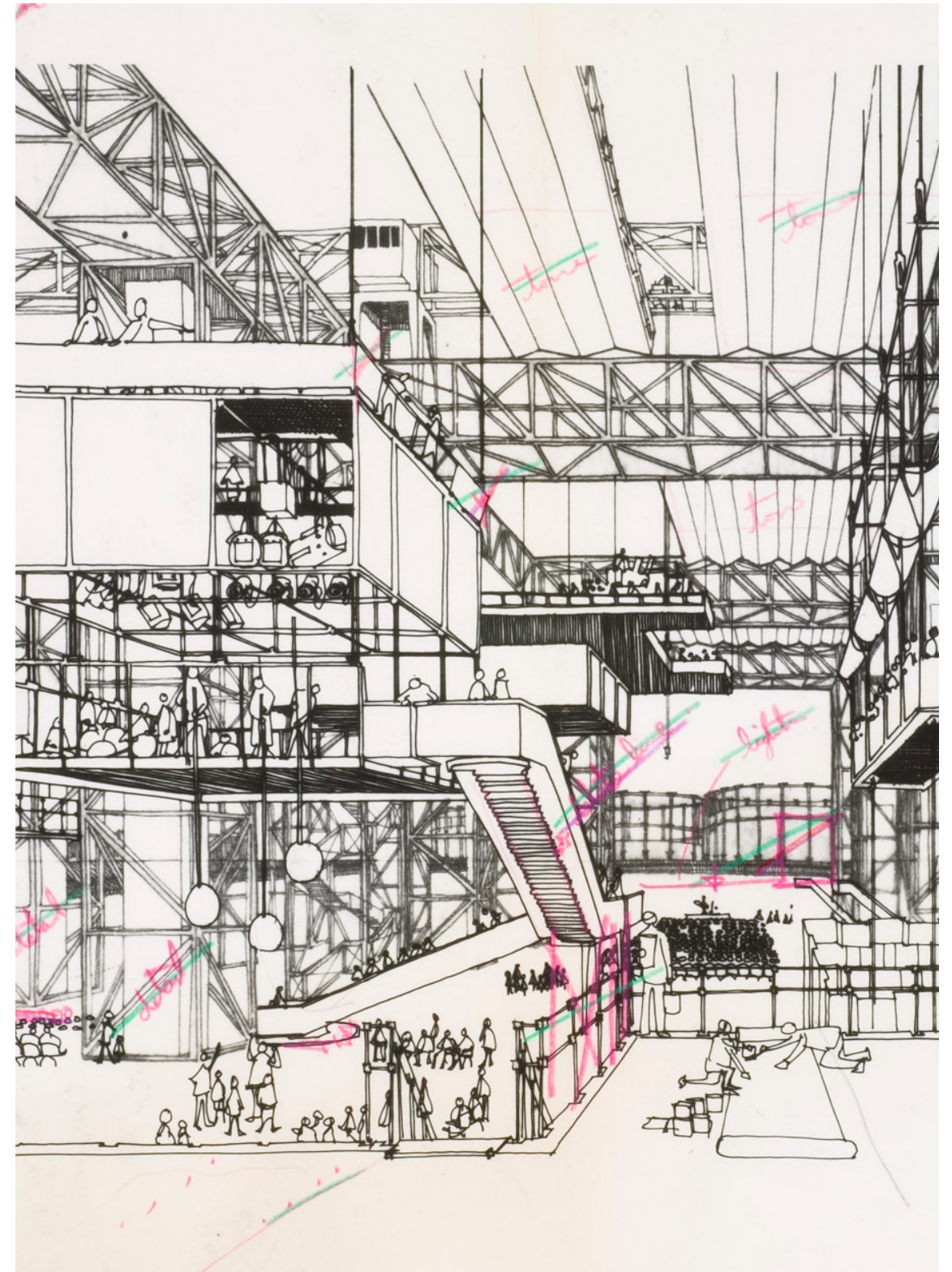
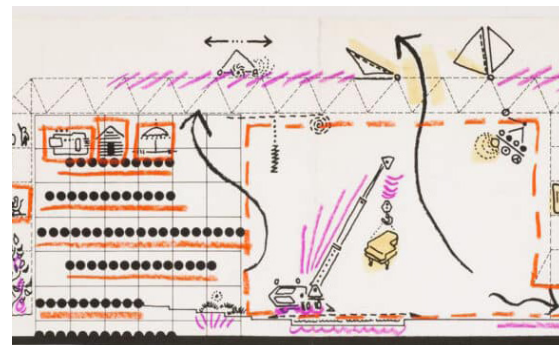
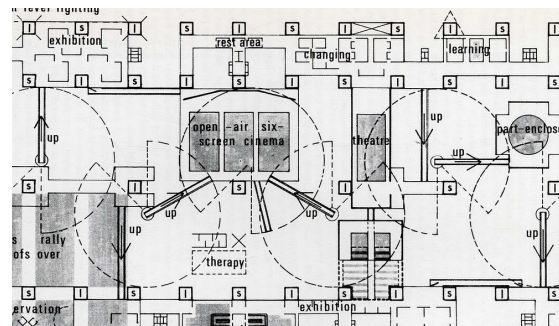
BRINGING BACK SOCIAL THEATRE: FUN PALACE

To examine empowerment the research draws on the conceptual framework of the Fun Palace, developed by Cedric Price in collaboration with Joan Littlewood in the 1960s. The Fun Palace was conceived as an architectural environment that “only suggests order and not direction,” allowing users to choose how and when to engage with cultural activities (Price, 1968). Rather than prescribing a singular mode of participation, it proposed a flexible framework capable of accommodating varied intensities of use.

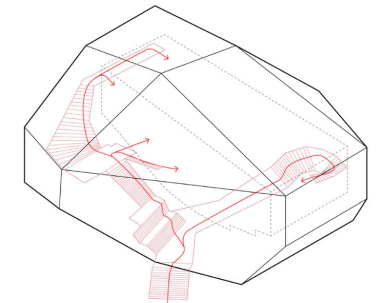
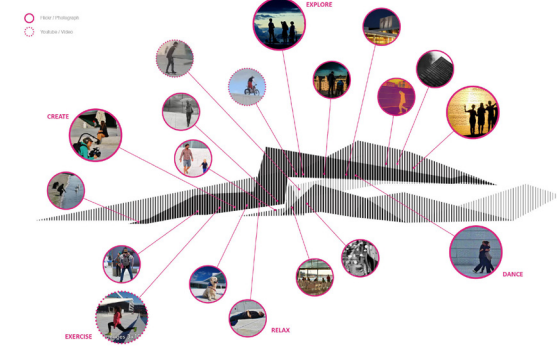
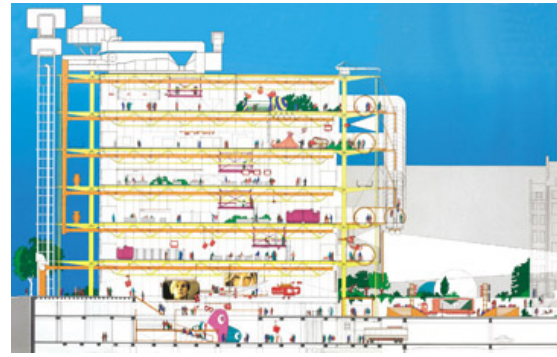
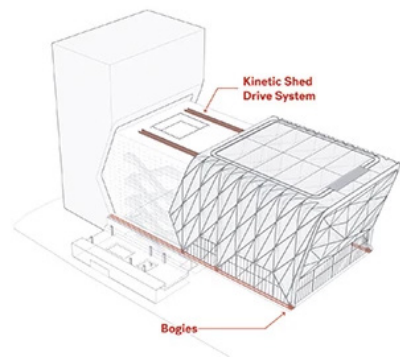
The Fun Palace was chosen as a conceptual base for this project because it is one of the influential projects of an architecture that is conceived as a framework or empowerment of the masses.

As Stanley Mathews describes, the Fun Palace proposed a shift from architecture defined by fixed typologies toward architecture understood as a responsive process, capable of accommodating change, participation, and evolving patterns of use (Mathews, 2006). Importantly, this approach did not aim to dilute cultural ambition, but to remove behavioral prescription from architectural space.

This position makes the Fun Palace particularly relevant to the opera house, a building type traditionally defined by technical precision, institutional authority, and regulated modes of spectatorship. Applying Fun Palace principles to the opera house constitutes a significant architectural and technical ambition. Opera houses demand acoustic accuracy, controlled environments, and highly coordinated logistics. The ambition of this project lies in testing whether a building defined by such specificity can also operate as an open architectural framework—supporting multiple ways of encountering culture without compromising performance quality.



LEARNING FROM CASE STUDIES: KEY PRINCIPLES



Flexibility is examined as the capacity of architecture to accommodate change over time while maintaining spatial and technical coherence. The focus lies on indeterminacy, understood as the ability of space to support varied configurations and evolving uses. This value was examined through **The Shed by Diller Scofidio + Renfro**, where adaptability is embedded through a kinetic envelope and reconfigurable interior systems. The case study illustrates how openness and technical performance (especially sensitive to sound design) can coexist, enabling the building to host diverse cultural activities across different spatial arrangements. In the context of the opera house, flexibility informs strategies for balancing performance requirements with variable spatial activation throughout the day. (Diller Scofidio + Renfro, 2019)

Informality refers to architectural conditions that allow spaces to support multiple interpretations and modes of occupation. Informal environments maintain structure while enabling degrees of freedom in how space is used and by whom it can be used. This concept was studied through the **Centre Pompidou by Renzo Piano Architects**, where open floor plates, exposed infrastructure, and generous circulation areas allow cultural activity to extend into collective and transitional zones. These spatial conditions enable engagement beyond formal exhibition spaces. Applied to the opera house, informality informs the treatment of foyers, circulation areas, and public interfaces as environments capable of sustained occupation and encounter. (Piano & Rogers, 1977; Gehl, 2011)

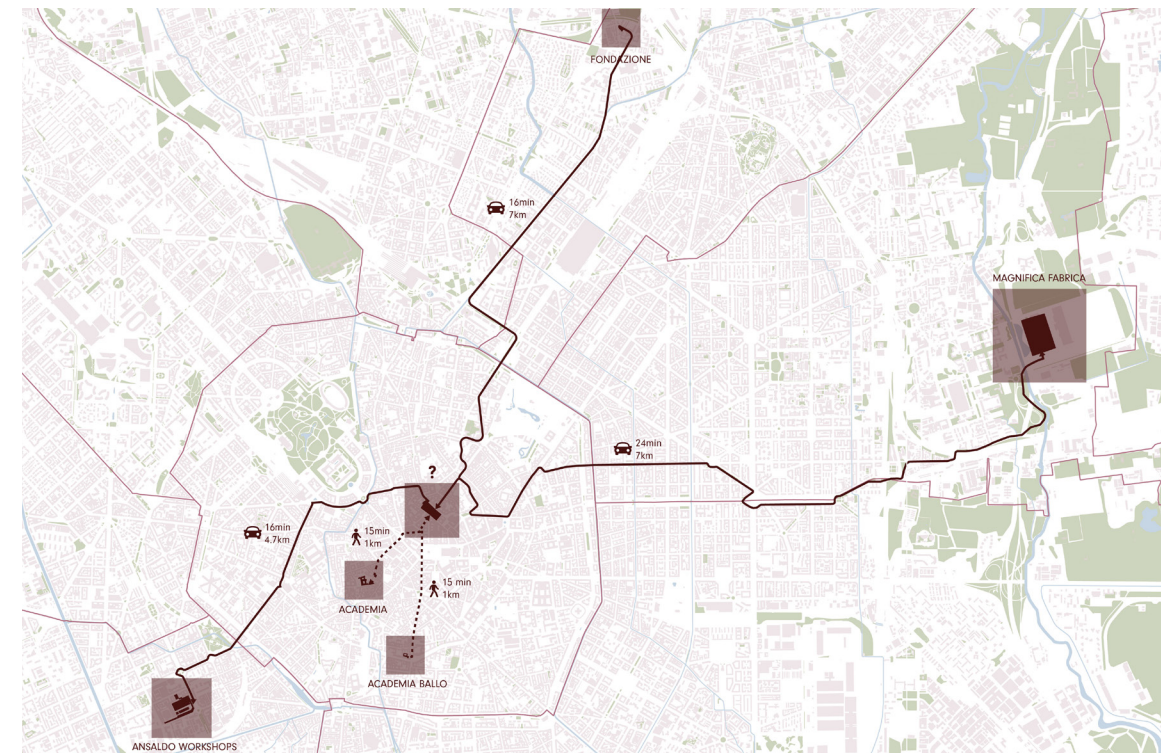
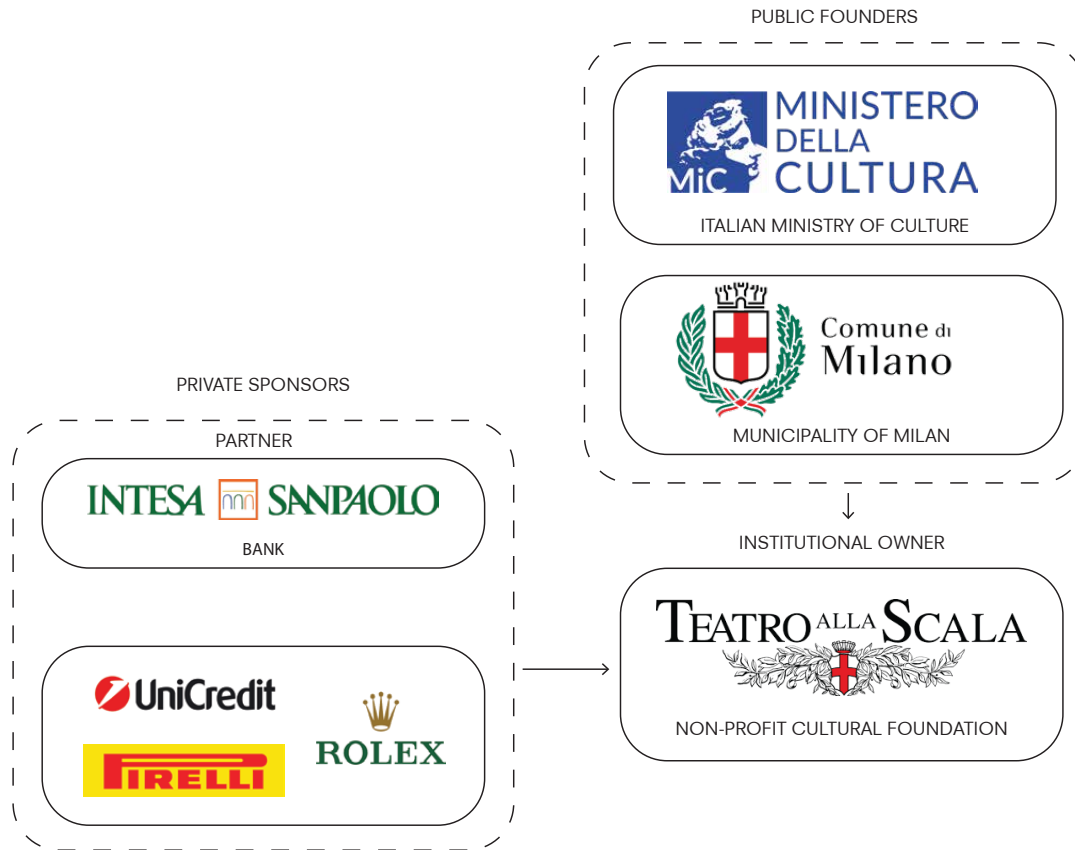
Permeability addresses how architecture organizes access, movement, and visibility across different levels of publicness. It is examined as a system of spatial gradients that structure engagement with the building. This value was studied through the **Oslo Opera House by Snøhetta**, where public circulation is integrated into the architectural form through an accessible roofscape. The building remains accessible independent of performance schedules, illustrating how cultural institutions can maintain openness while accommodating operational requirements.

Ludicity is understood as a spatial quality that encourages curiosity and exploratory engagement. This value emphasizes discovery and experimentation within architectural space. It was examined through **Casa da Música by OMA**, where non-hierarchical circulation, varied spatial sequences, and visible production spaces create multiple ways of encountering music and performance within the building.

Together, these four values form the theoretical framework backbone through which the opera house will be approached as a Fun Palace. This study will function as analytical tool that will guide decisions related to design.

CLIENT

02 APPROACH: RESEARCH METHODS



CLIENT NETWORK

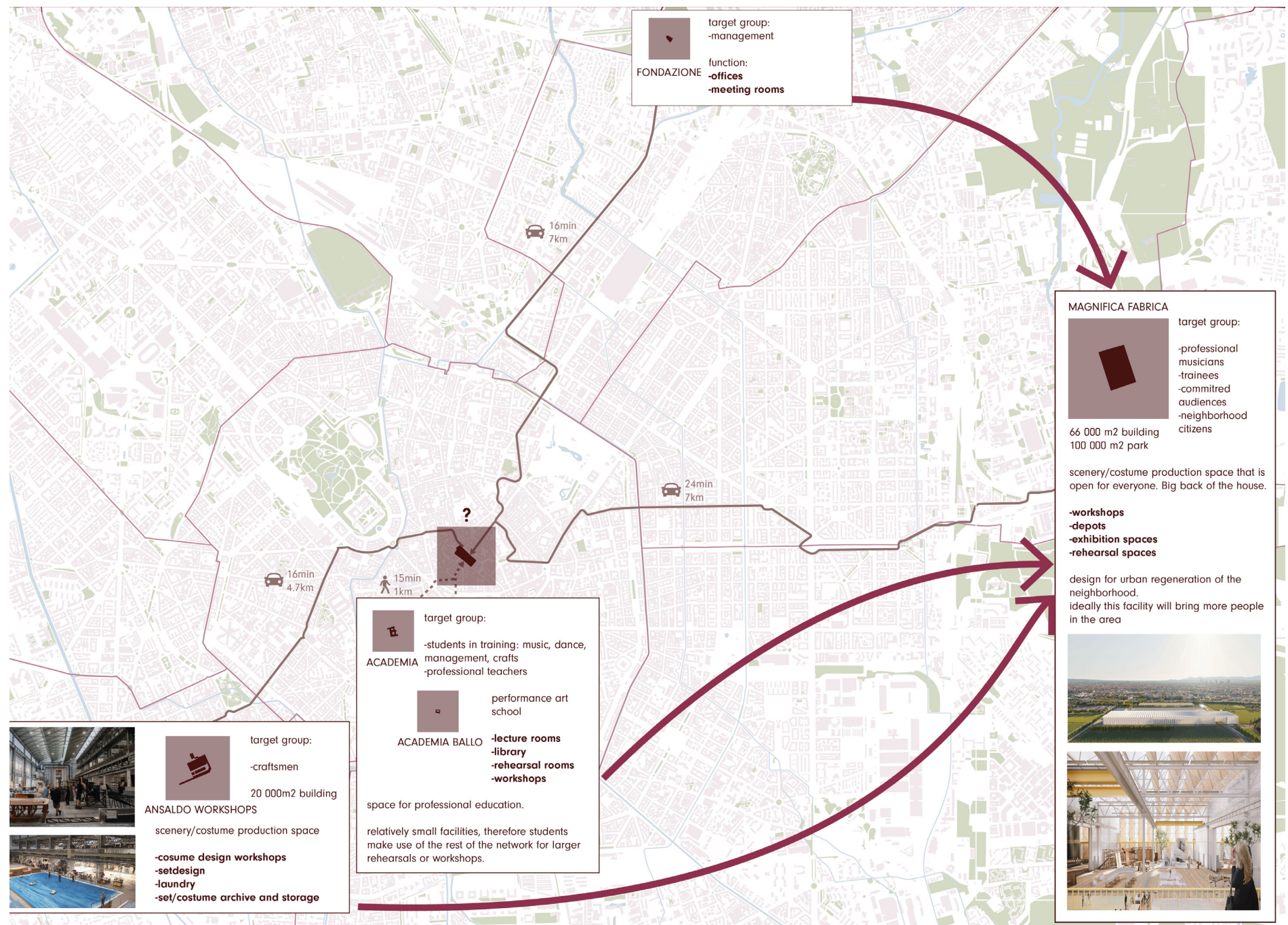
The Fondazione Teatro alla Scala di Milano currently operates across multiple sites, as shown. The academy, with 1,700 students annually, has its own dedicated facility, as does the Laboratori del Teatro alla Scala, a 20,000-square-meter workshop. In 2024, architects FRPO won the competition for a new workshop, Magnifica Fabbrica, which will span 60,000 square meters and serve as the foundation's next major workshop and will replace the current one.

This demonstrates that La Scala operates at various scales within its industry. Internationally, it is one of the largest and most respected opera producers, with its productions performed in theaters worldwide.

Nationally, La Scala serves as the capital of opera, hosting the highest number of opera productions and performances in Italy, while also being deeply embedded in the country's history and cultural heritage of opera. Locally, La Scala, as Milan's oldest theater, represents a significant part of the city's history and cultural identity.

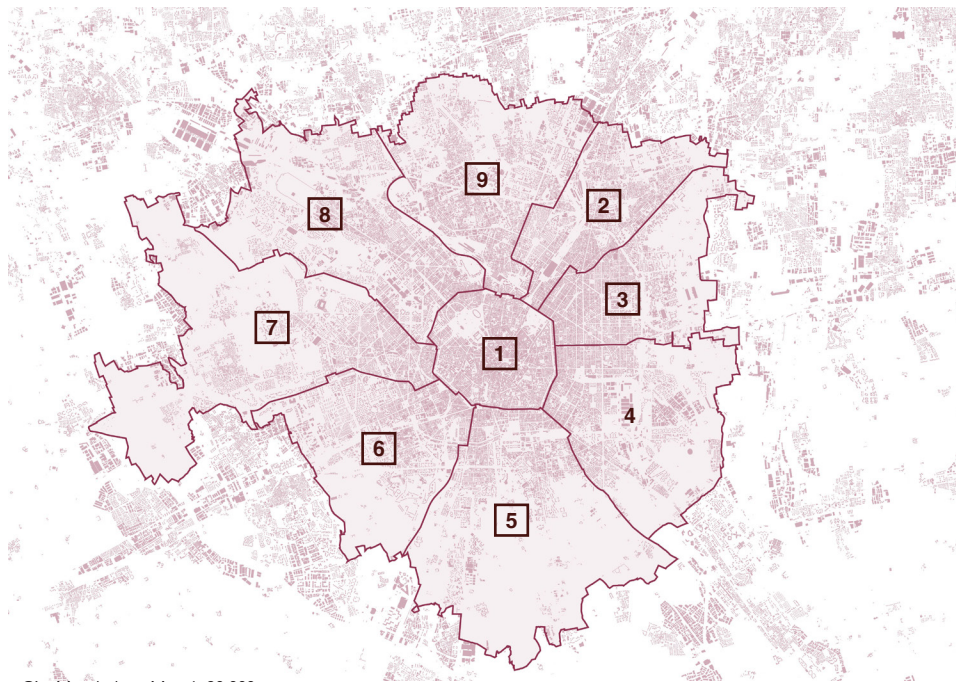
The data also reflect La Scala's reputation, with a high occupancy rate for its productions. In 2023, the theater held a total of 172 performances with an occupancy rate of 90% (Figure 4.3). Although the COVID-19 pandemic caused a slight decline in productions, performances, and occupancy rates, La Scala has demonstrated resilience and maintained its standing as a cultural landmark.

02 APPROACH: RESEARCH METHODS

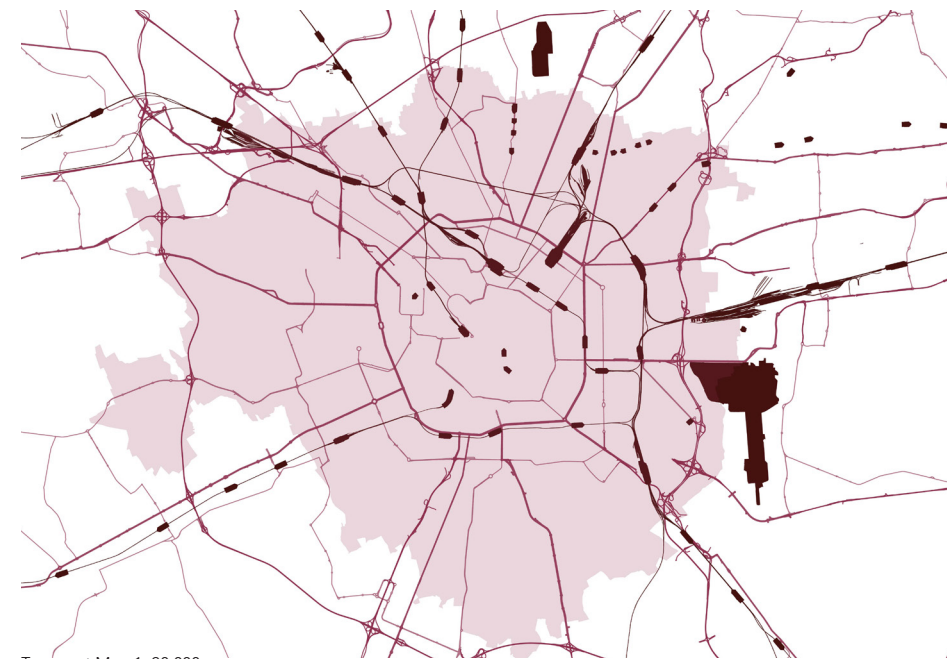


SITE RESEARCH: L

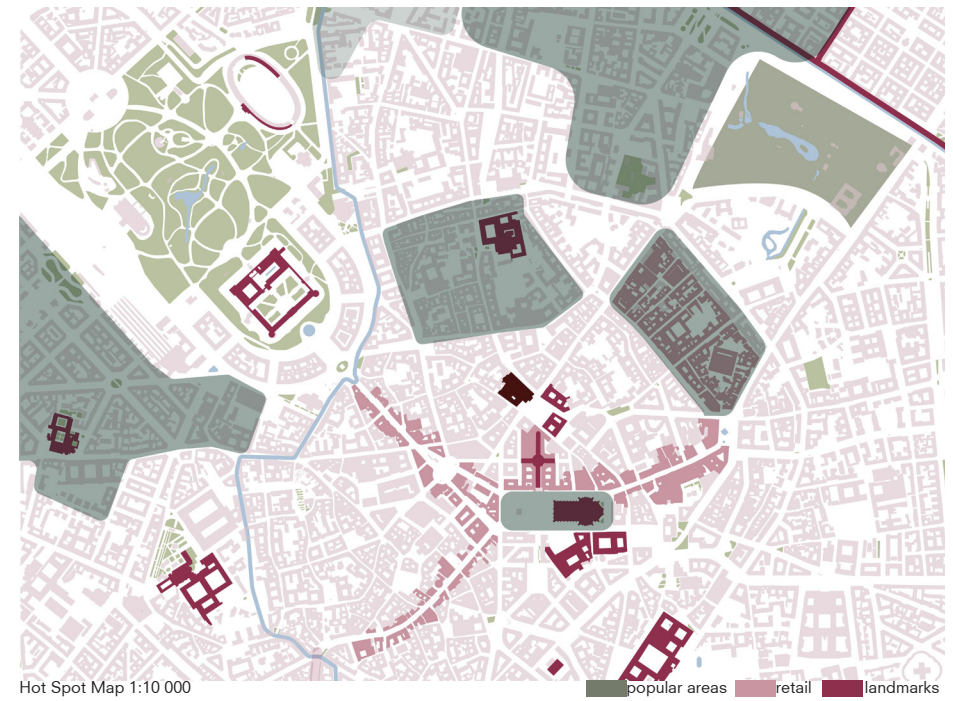
02 APPROACH: RESEARCH METHODS



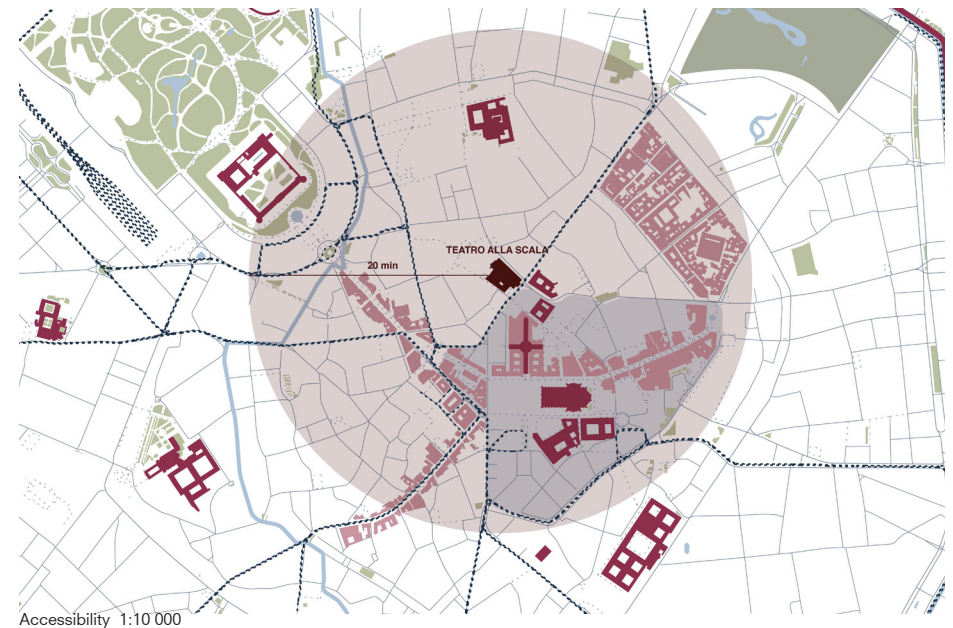
City Morphology Map 1: 90 000



Transport Map 1: 90 000

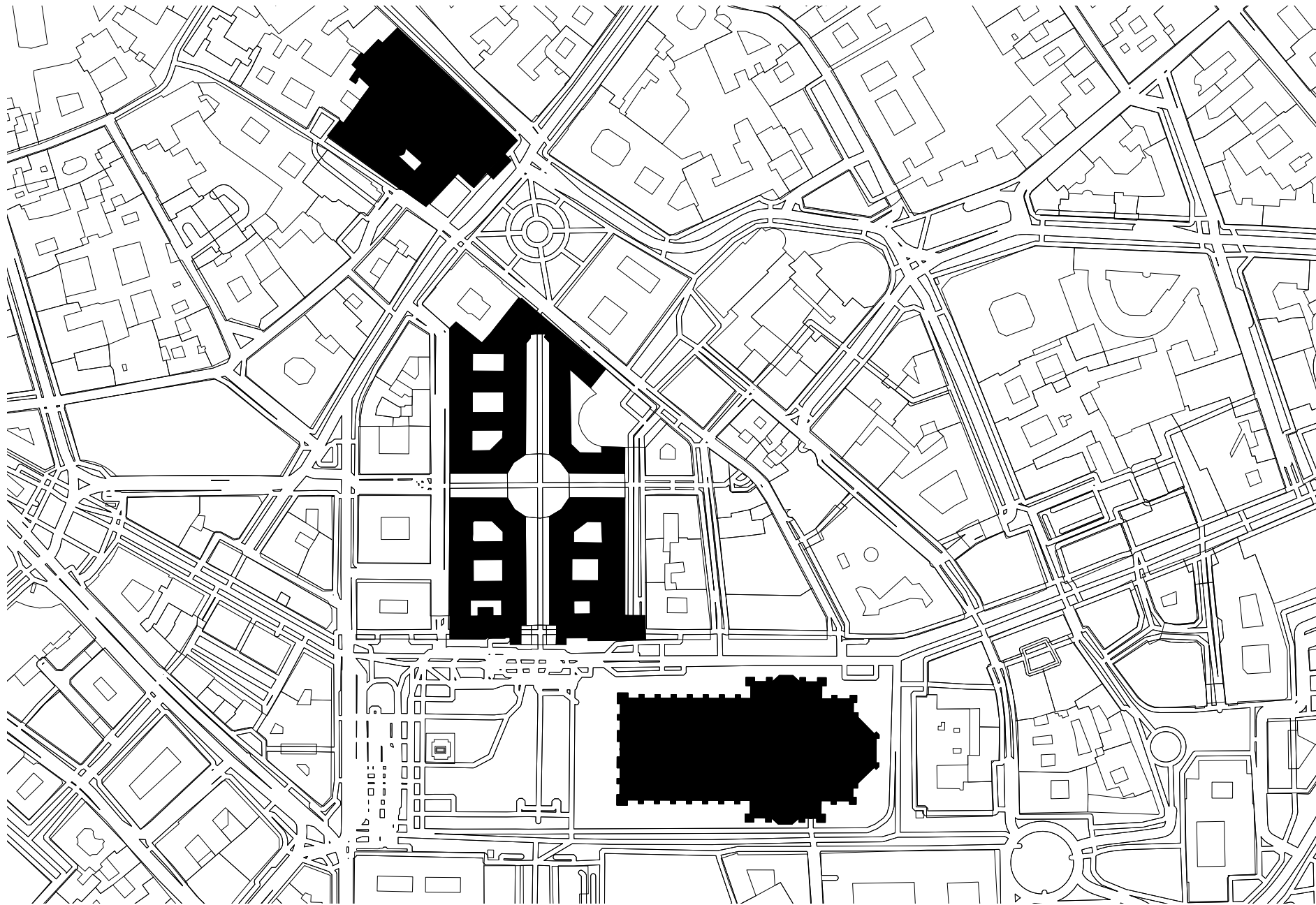


Hot Spot Map 1: 10 000



Accessibility 1: 10 000

SITE RESEARCH: M



02 APPROACH: RESEARCH METHOD

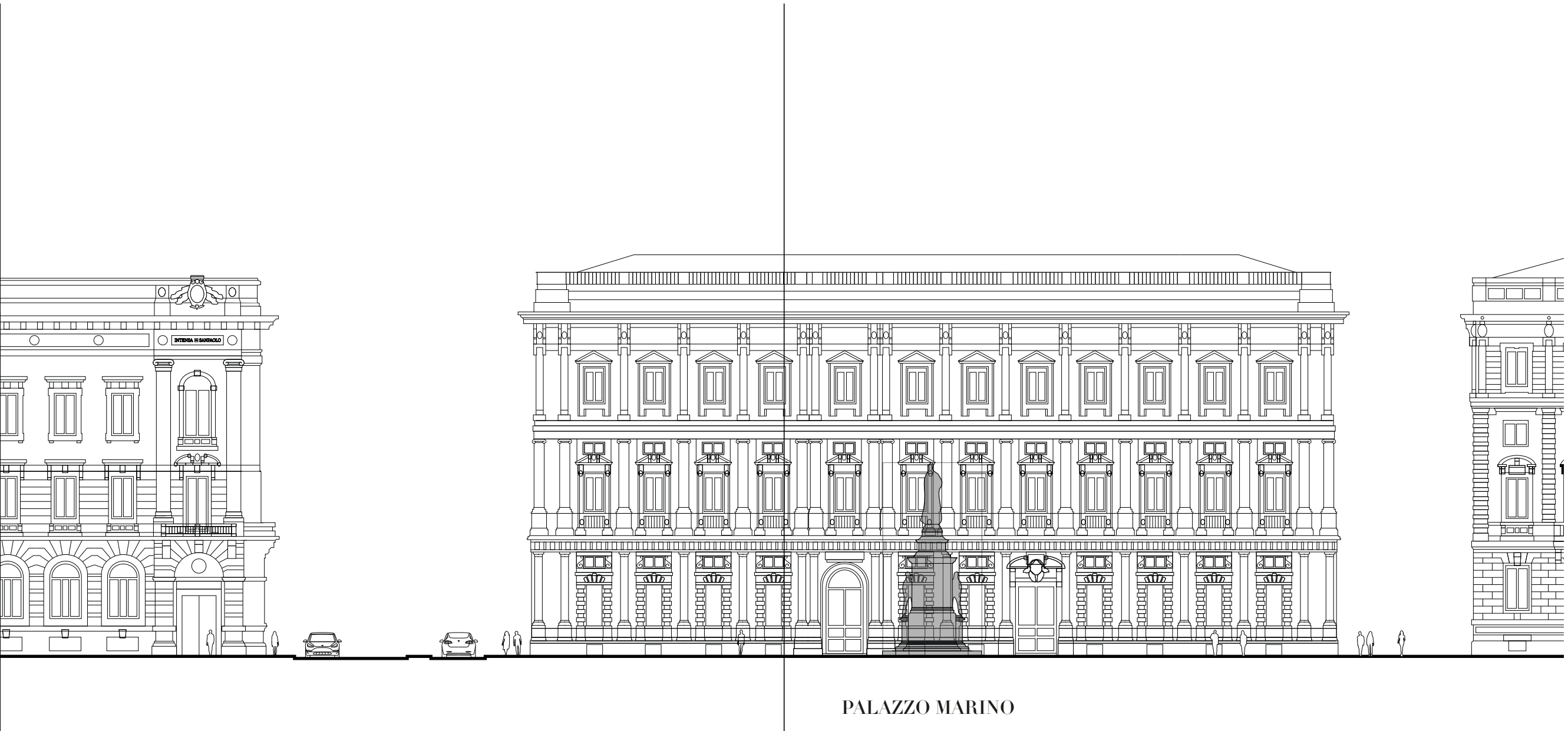
Walking from the Duomo di Milano toward Teatro alla Scala, the city gradually shifts from overwhelming monumentality to a more focused cultural realm. The vast openness of Piazza del Duomo, dominated by the cathedral's vertical presence, gives way to directed movement as one enters the Galleria Vittorio Emanuele II.

Here, the space becomes interiorized yet remains public, with filtered light from the glass dome mediating the transition. Exiting the arcade, the scale compresses once again, leading into Piazza della Scala, where the opera house appears more restrained and introverted in contrast to the grandeur of the Duomo.

This sequence transforms the experience from collective spectacle to cultural anticipation, guiding the visitor from the city's most central and active space toward the threshold of performance. It reveals how the opera institution does not dominate through monumentality alone, but through its carefully positioned presence within the urban fabric. (Van Tillborg, 2025)

SITE RESEARCH: S

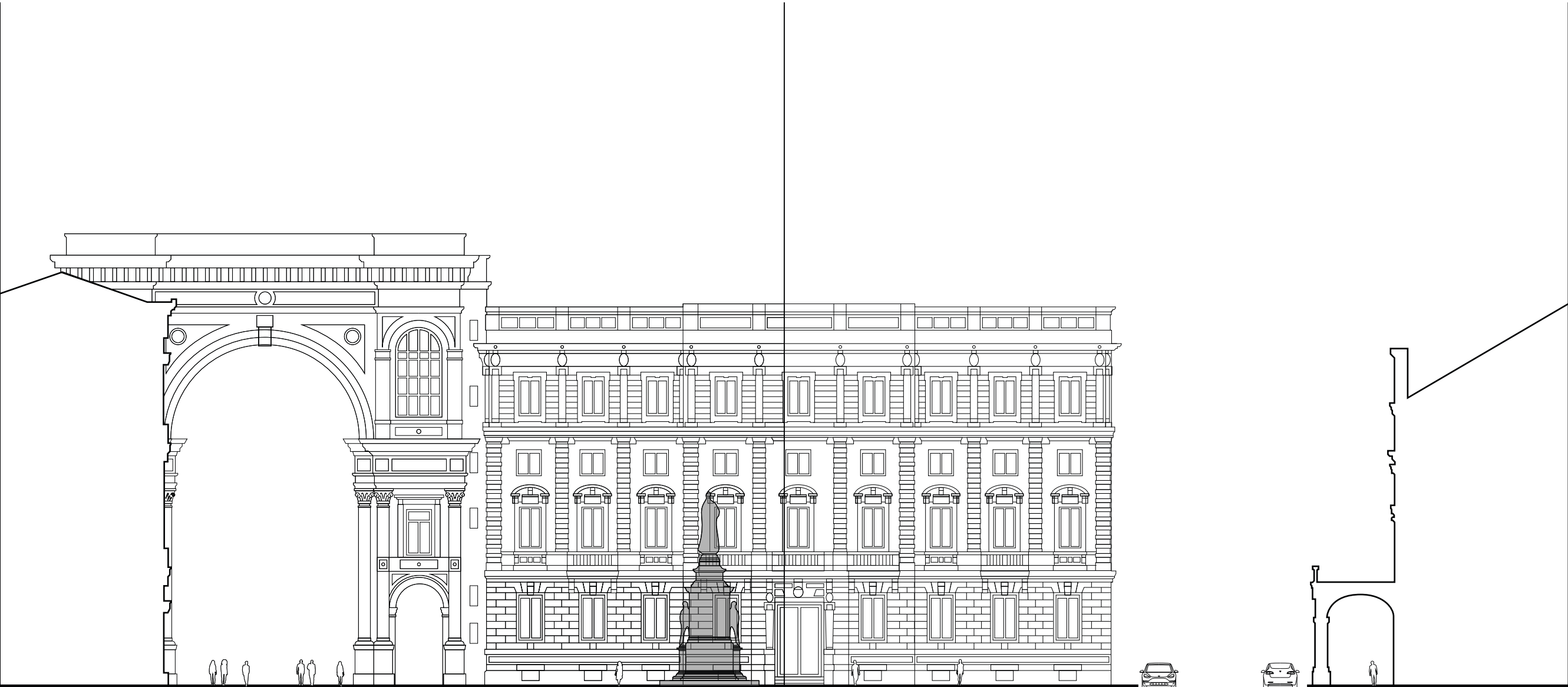
02 APPROACH: RESEARCH METHODS



PALAZZO MARINO

SITE RESEARCH S

02 APPROACH: RESEARCH METHODS



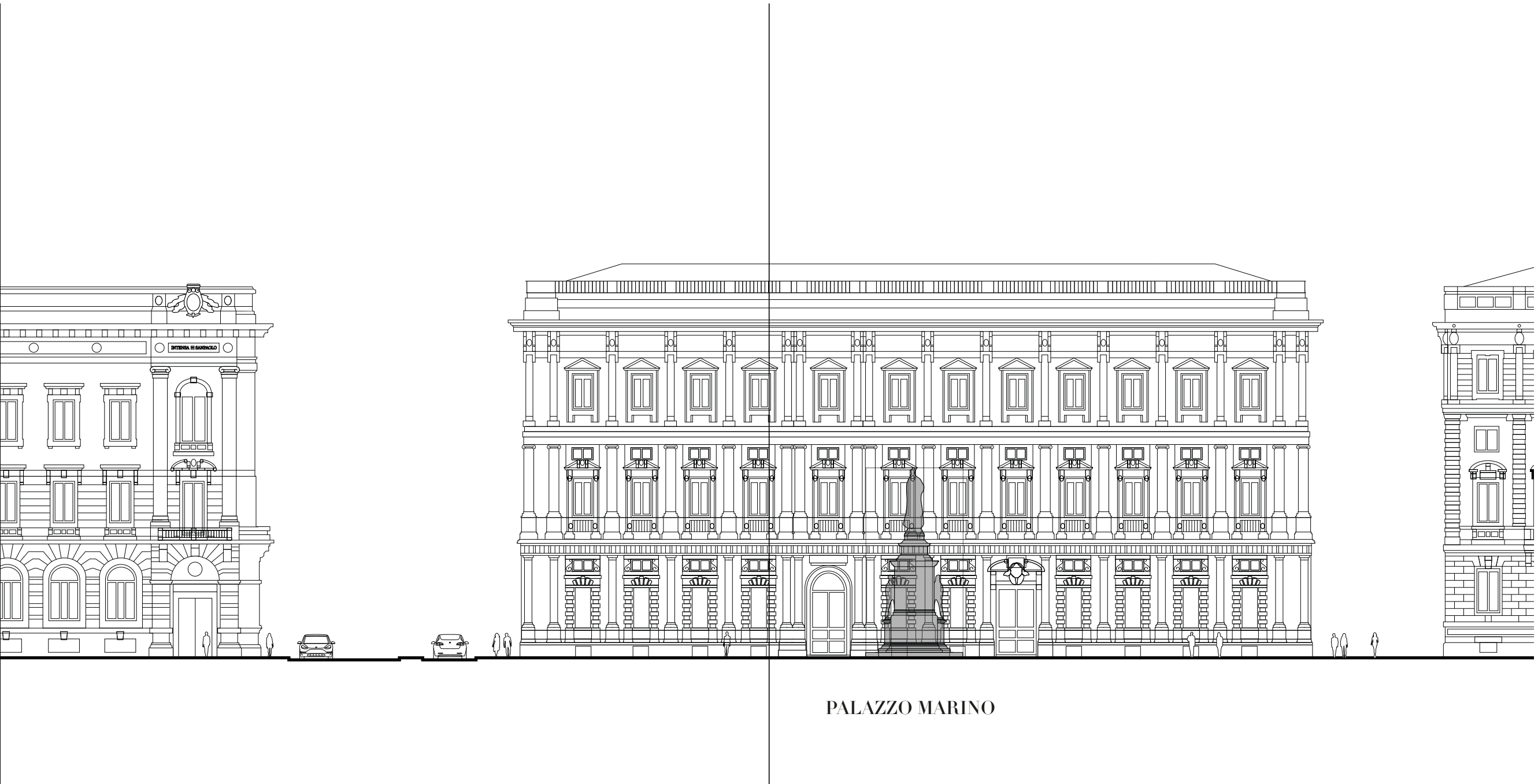
**GALLERIA VITTORIO
EMANUELE II**

PALAZZO BELTRAMI

LA SCALA

SITE S

02 APPROACH: RESEARCH METHODS



PALAZZO MARINO

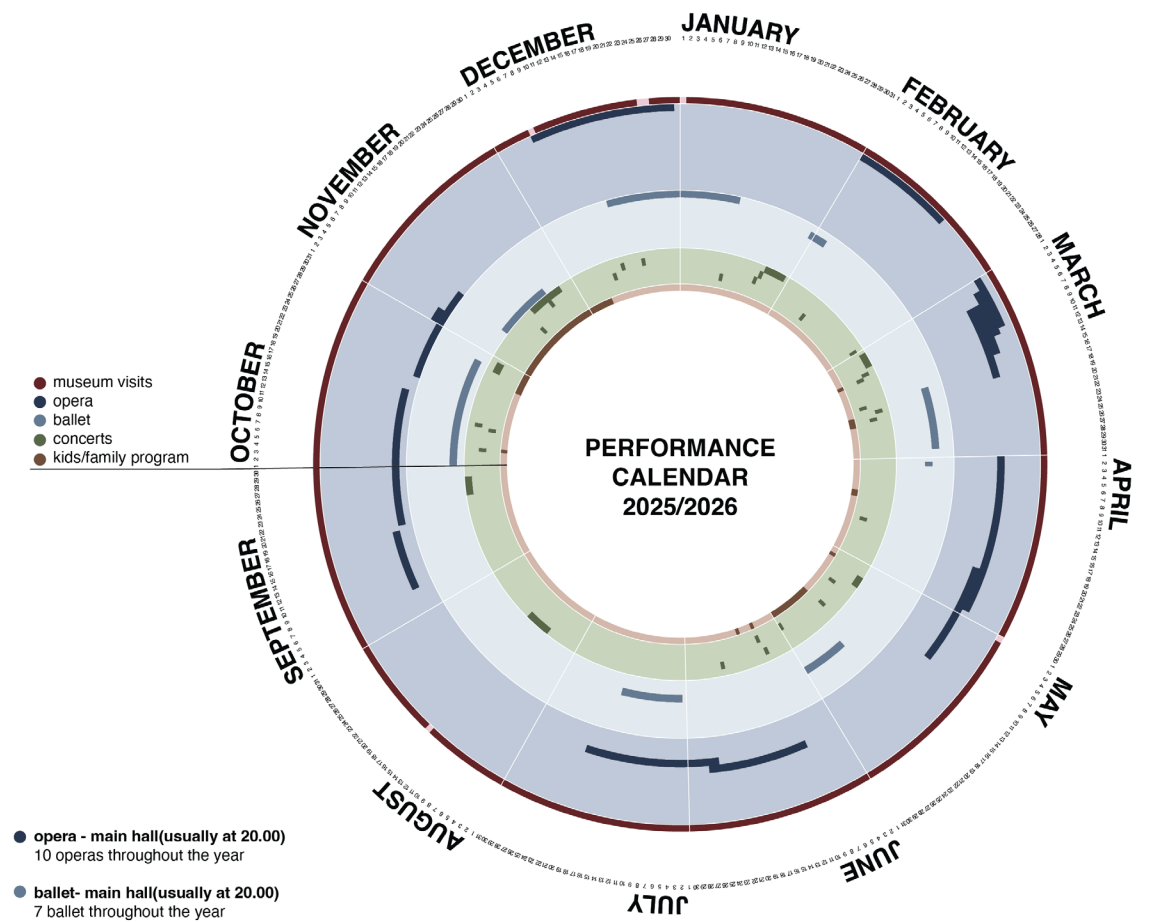


PROGRAM

02 APPROACH: RESEARCH METHODS

As a starting point of program development, existing Teatro Alla Scala was analysed

250 + Performances per Year



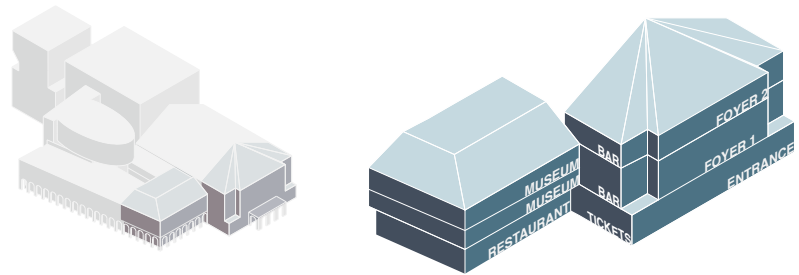
- museum visits
- opera
- ballet
- concerts
- kids/family program

- opera - main hall(usually at 20.00)
10 operas throughout the year
- ballet- main hall(usually at 20.00)
7 ballet throughout the year
- concerts - main hall(any time)
orchestra recitals, piano recitals, guest concerts
- kids/family program - main hall(usually 14.00)
children and family performances
- museum- main hall + museum space(9.30-17.30)
daily except the public holidays

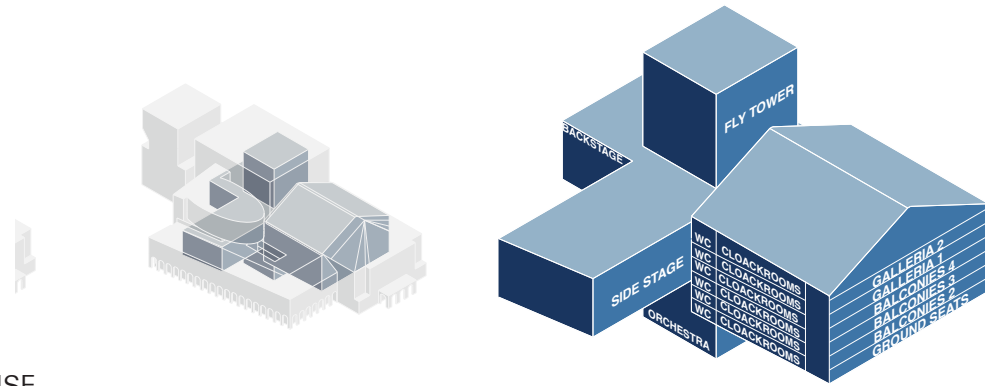
PROGRAM

02 APPROACH: RESEARCH METHODS

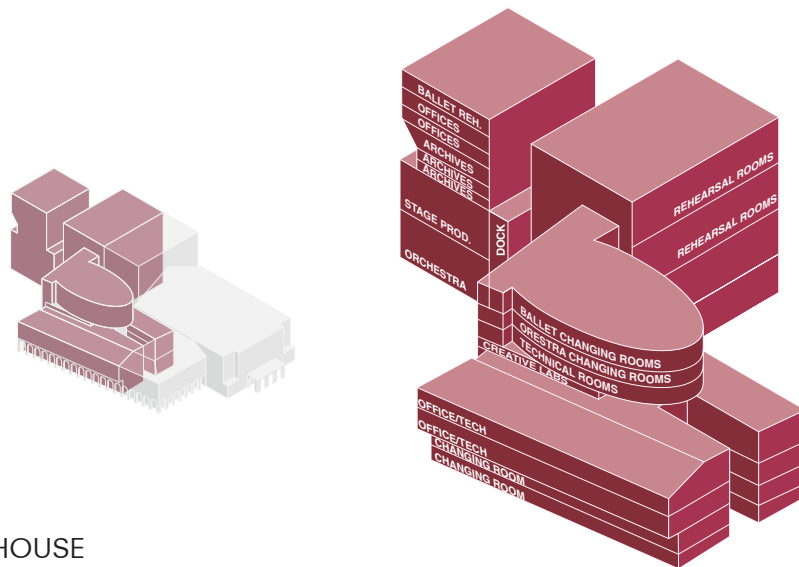
FRONT OF THE HOUSE



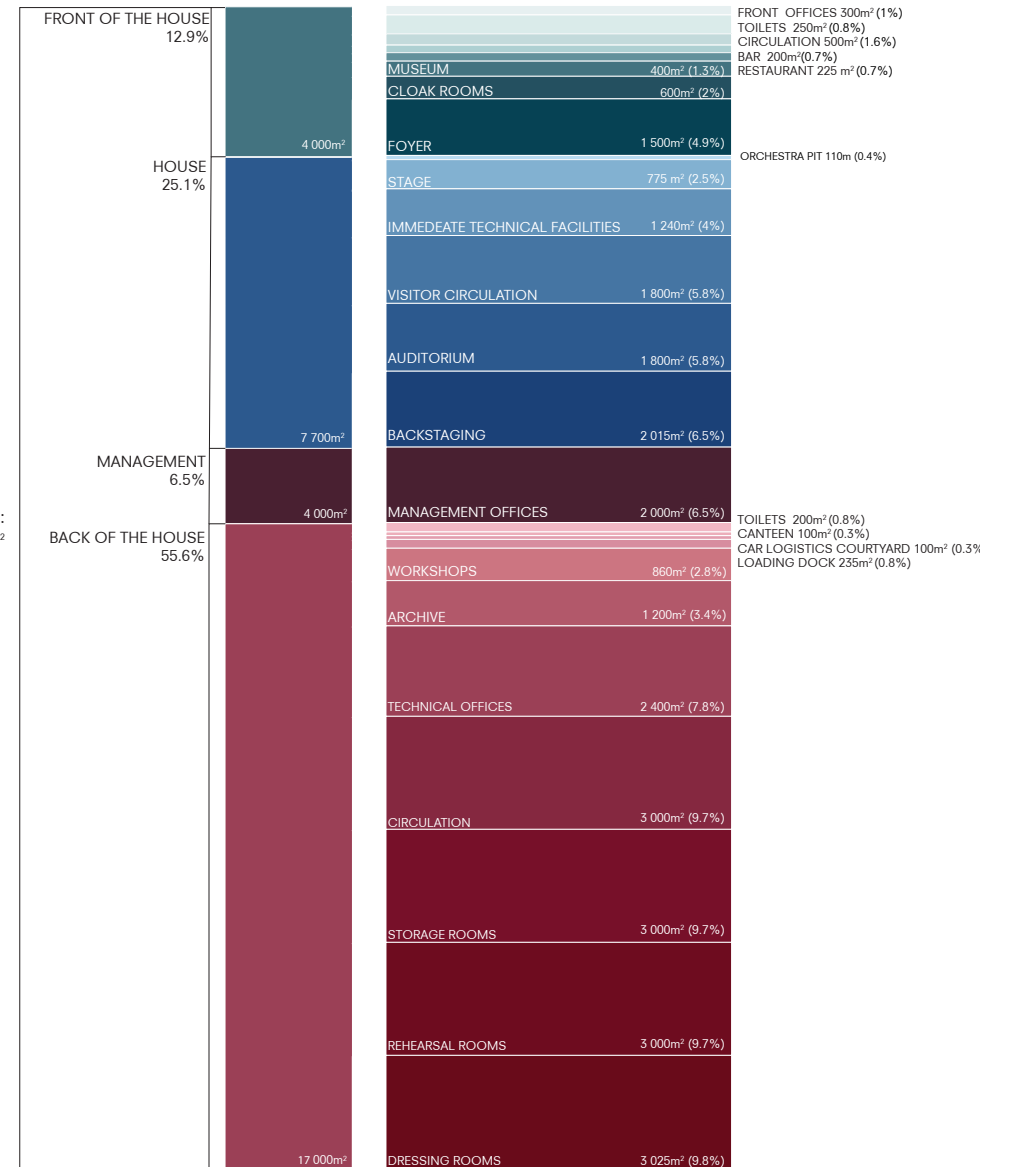
HOUSE



BACK OF THE HOUSE



TOTAL PROGRAM:
30 880m²



PROGRAM

TEATRO MUSEUM COLLECTION

Current Museum Size = 400m2



The collection of the Museo Teatrale alla Scala preserves the cultural and artistic history of opera connected to Teatro alla Scala. Through a variety of objects, the museum documents the development of opera production, performance traditions, and the figures who shaped the institution over time. The museum space hosts:

Portraits and artworks

The museum displays numerous portraits, paintings, and busts of composers, performers, and conductors associated with La Scala, including figures such as Giuseppe Verdi and Maria Callas.



Historic musical instruments

The collection includes pianos, harpsichords, and orchestral instruments from different periods, illustrating the evolution of musical performance and opera orchestration.

Stage costumes

Costumes from past opera productions demonstrate the theatrical aesthetics and craftsmanship involved in staging performances.

Scenography and stage design

The museum exhibits sketches, drawings, and scale models of stage sets that reveal how opera productions were visually designed.

Manuscripts and musical scores

Original manuscripts, annotated scores, and documents provide insight into the creative processes of composers and conductors.

Opera memorabilia and archives

Posters, playbills, librettos, and historical programs document the performance history



02 APPROACH: RESEARCH METHODS

TEATRO ARCHIVE COLLECTION

Current Archive Size = 1 200 m2



The hidden archive of Teatro alla Scala refers to the Archivio Storico del Teatro alla Scala, an internal archive that preserves the institutional memory of the theatre. Unlike the museum, it is not primarily designed for public exhibition and functions mainly as a research and preservation archive. The archive files are available online and they include:

Performance records

Detailed documentation of La Scala's performances since the theatre opened in 1778, including programs, cast lists, rehearsal records, and season schedules.

Musical scores and conducting materials

Annotated scores used by conductors and orchestras during productions, documenting how specific performances were interpreted.

Stage and production documentation

Technical drawings, stage plans, lighting schemes, and scenography materials used to construct opera productions.

Costume and scenography archives

Sketches, costume plans, and documentation related to stage design and theatrical production.

Administrative documents

Contracts, correspondence, financial records, and internal documents that show how the theatre was managed and operated.

Photographic and audiovisual materials

Historical photographs and recordings documenting performances, artists, rehearsals, and stage production.



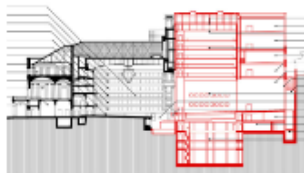
OPERA TYPOLOGY: PROGRAM DATA



Plot Area: 8 000m²
 Building Area: 31 000m²
 N of performance halls: 1
 Capacity: 2 030 seats



1. Traditional horseshoe opera auditorium: Proscenium stage



1. FOH 4 600m² (15%)
 2. BOH 10 230m² (33%)
 3. STAGE 4 300m² (14%)
 4. Support 11, 500m² (37%)



Plot Area: 16 000m²
 Building Area: 41 000 m²
 N of performance halls: 2
 Capacity: 1 960 seats



1. Horseshoe opera auditorium(acoustically best)
 2. Black box / experimental stage (Takkelloftet)



1. FOH 9,500 m² (≈23%)
 Grand multi-level foyer
 Public circulation, balconies, reception areas
 2. BOH 11,500 m² (≈28%)
 Extensive workshops, storage
 Rehearsal rooms, dressing rooms
 3. H 15,000 m² (≈37%)
 Main opera stage with wagon system
 Fly tower, orchestra pit, Takkelloftet stage
 4. Support 5,000 m² (≈12%)



Plot Area: 8 000m²
 Building Area: 22 000m²
 N of performance halls: 4
 Capacity: 1 750 seats



1. Vineyard-style concert hall
 2. Flexible shoebox hall
 3. Black box/experimental spaces
 4. Electronic/media performance studio



1. FOH 8,500 m² (≈39%)
 Public foyers, terraces, circulation ramps
 Music school, workshops, education studios
 2. BOH 3,000 m² (≈14%)
 Performer support, storage, rehearsal support
 3. H 6,000 m² (≈27%)
 Grand Auditorium, Small Auditorium, Black box & electronic music studio
 4. Support 4,500 m² (≈20%)



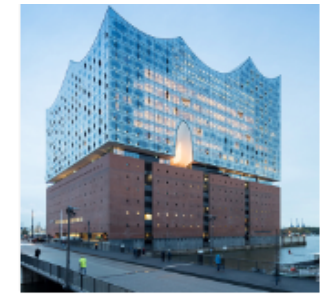
Plot Area: 20 000m²
 Building Area: 31 000m²
 N of performance halls: 3
 Capacity: 1 900 seats



1. Horseshoe opera auditorium
 2. Flexible secondary stage
 3. Studio / rehearsal stage (convertible)



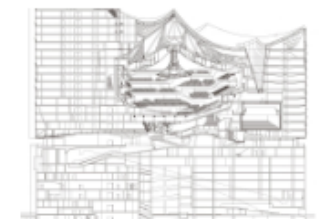
1. FOH 12,000 m² (≈31%)
 Foyers, public roof circulation
 Education rooms, outreach spaces
 2. BOH 9,000 m² (≈23%)
 Workshops, rehearsal rooms, dressing rooms
 3. H 11,000 m² (≈29%)
 Main opera stage, secondary stage - Orchestra pit, stage machinery
 4. Support 6,500 m² (≈17%)



Plot Area: 11 000 m²
 Building Area: 120 000m²
 N of performance halls: 3
 Capacity: 2 820 seats



1. Vineyard-style concert hall
 2. Shoebox chamber music hall
 3. Studio/education performance space



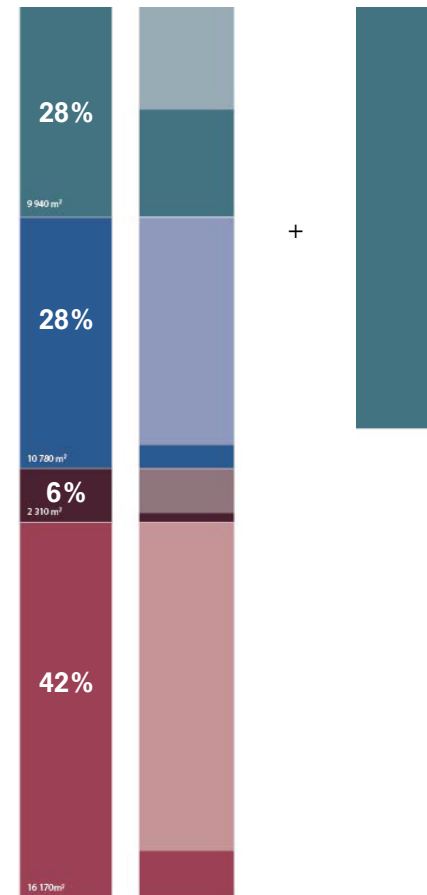
1. FOH 40,000 m² (≈33%)
 Public plaza, foyers, circulation
 Kaistudio education spaces
 2. BOH 17,000 m² (≈14%)
 Performer support, rehearsal, storage
 3. H 28,000 m² (≈23%)
 Grand Hall, Small Hall, Kaistudio
 4. Support ~35,000 m² (≈30%)



OSLO OPERA HOUSE 2007 SNOHETTA

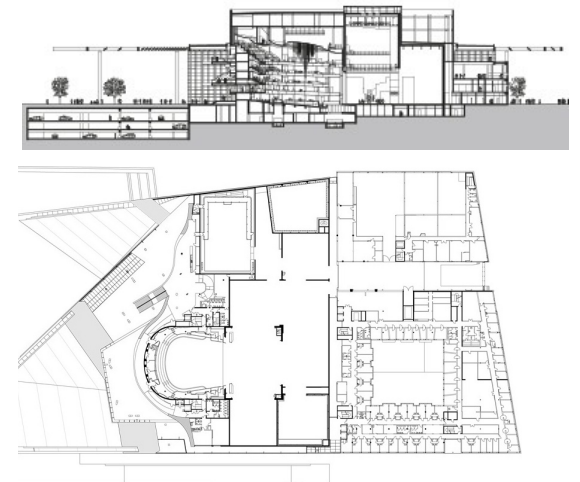
03 CLIENT SITE PROGRAM

TOTAL: 38 500M²



Public Plaza

Conceived as an extension of the public landscape, allowing visitors to walk across its sloping roof as part of the city's everyday movement. Rather than separating audience and building, the architecture invites informal occupation before any performance. Monumentality is achieved through accessibility, merging civic space and cultural institution.



Total Gross Floor Area (GFA): approx. 38,000 m²

Total number of rooms: 1,100 rooms

Program distribution

Public areas (foyers, circulation, accessible roof): ~11,200 m² (≈29%)

Stage areas (main stage + secondary stages): ~8,250 m² (≈21%)

Rehearsal rooms and workshops: ~12,500 m² (≈32%)

Administration, technical support, and services: ~6,550 m² (≈18%)

Performance halls and seating capacity

Main Auditorium (opera and ballet): ~1,360 seats

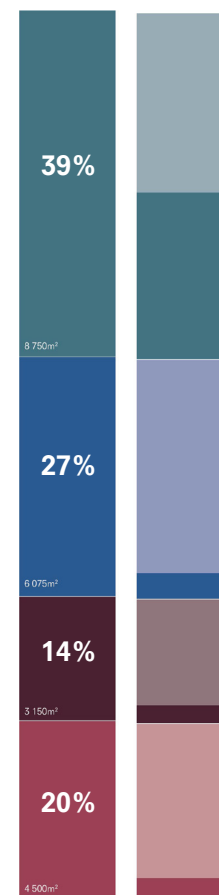
Second Stage / Scene 2 (experimental productions): ~400 seats

Studio /Practice Stage (small-scale performances): ~200 seats



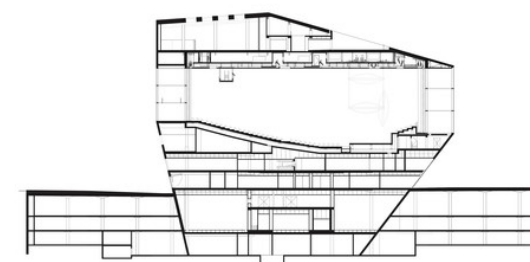
CASA DA MUSICA 2005 OMA

TOTAL: 22 500M²



03 CLIENT SITE PROGRAM

Defined by non-linear circulation and spatial ambiguity, guiding visitors through a sequence of ramps, foyers, and compressed spaces. Visual openings reveal rehearsal rooms and backstage areas, while shifts in scale and orientation delay arrival, framing the concert hall as a gradual spatial discovery.



Total Gross Floor Area (GFA): approx. 54,000m²

Program distribution

- Public areas (foyers, ramps, circulation, public balconies): ~16,000 m² (≈30%)
- Performance halls (main + secondary halls): ~6,000 m² (≈11%)
- Rehearsal rooms, studios, music production spaces: ~6,500 m² (≈12%)
- Administration, education, technical support, services, BOH: ~25,500 m² (≈47%)

Performance halls and seating capacity

- Main Auditorium / Sala Suggia (symphonic concerts): ~1,300 seats
- Small Auditorium / Sala 2 (experimental & flexible): ~300-350 seats
- Cybermúsica / Electronic Music Room: ~60 seats

PARTICIPATORY MEDIUM/SMALL SCALE THEATRE PROGRAM

BEAUSOBRE THEATRE AND MUSIC

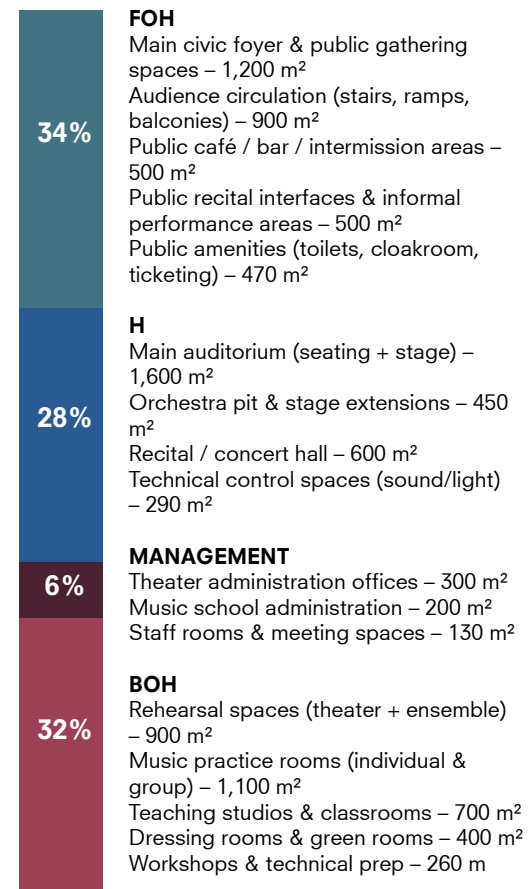
03 CLIENT SITE PROGRAM

Although for acoustic and spatial requirements for building to be able to house opera conventional classical performance buildings were analyzed and useful insights were gathered. Given the nature of the research question and the the fact the results show more empowerment and interest within smaller scale venues that offer a more participatory and multifunctional program. it was also decided to research theatres to lean in into a more audience participatory approach to structure the program for the reamigned opera house. These case studies

1. An classical music/peformance centre that ebcorporates a dance/music school and an immersive theatre.
2. Immersive Theate



TOTAL: 10 500M²



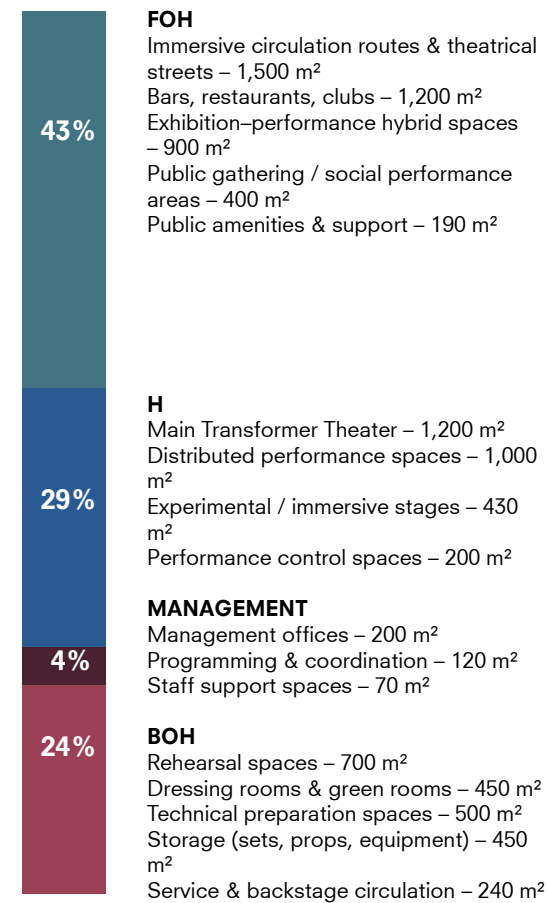
PARTICIPATORY MEDIUM/SMALL SCALE THEATRE PROGRAM

DALI TRANSFORMER THEATRE

03 CLIENT SITE PROGRAM

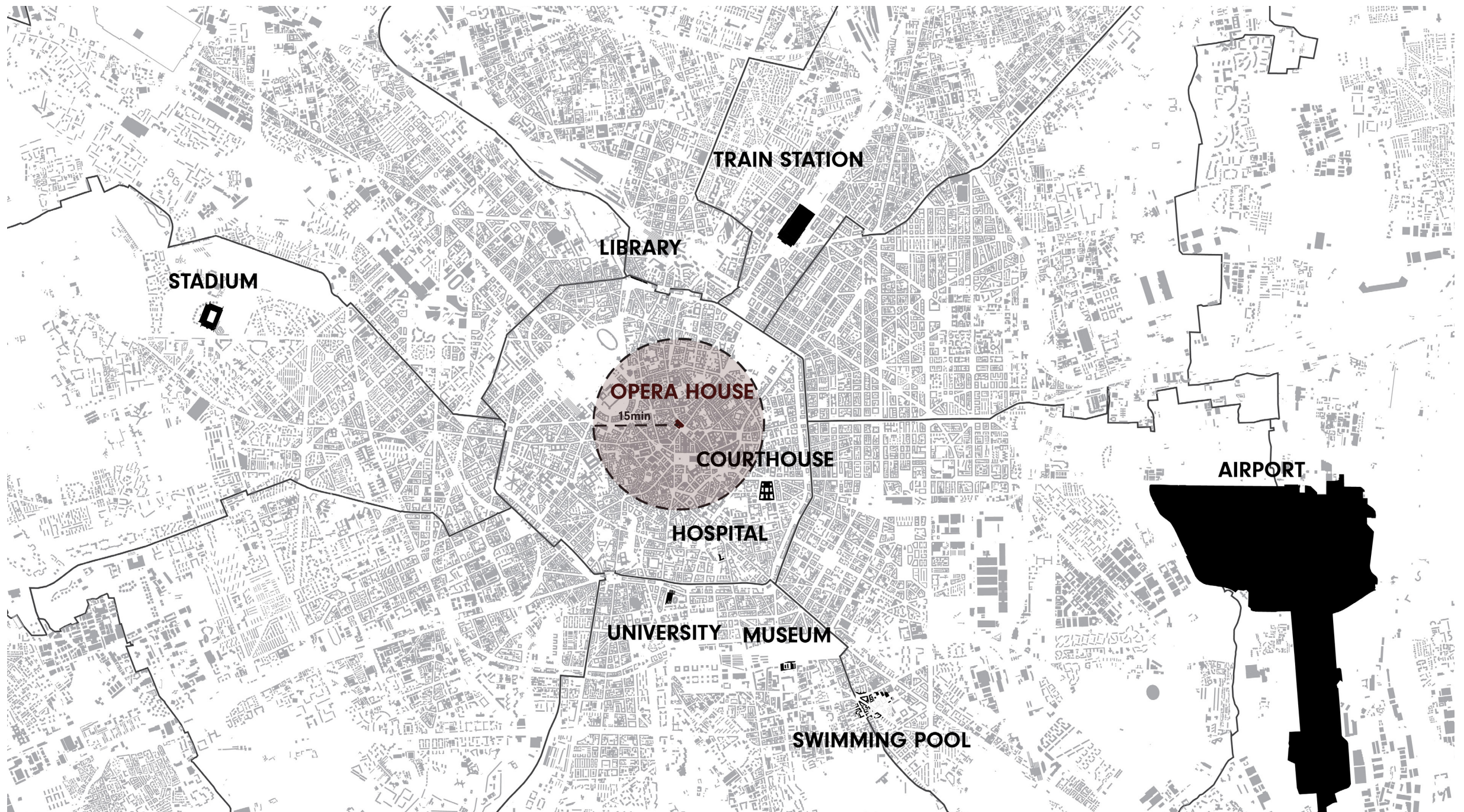


TOTAL: 9 750M²



GROUP LENS

02 APPROACH: RESEARCH METHODS



GROUP LENS



02 APPROACH: RESEARCH METHODS

Within the scope of the group theme, the Nolli map identifies public spaces at the plinth level of the city, revealing the character of the surrounding urban fabric and the degree to which the built environment is porous. Given that the opera house plot is located in the city center, it exhibits a high percentage of void space and public programs, such as museums, restaurants, and piazzas, particularly towards the south.

This observation is highly relevant to the opera house project, as it provides insight into the extent to which an opera house should be permeable. In line with the project's research question, permeability emerges as a key design principle for the new opera house. The Nolli map indicates a clear direction for this permeability—towards the south—suggesting that the building should position itself as open, inviting, and publicly accessible in this direction.

Furthermore, the surrounding buildings are characterized by the integration of courtyards. This spatial strategy appears to respond to the dense urban context and the limited availability of outdoor spaces with a more private or semi-private character. As a result, an additional ambition emerging from the group research is the implementation of a restricted courtyard within the opera house design, offering a more controlled outdoor space while maintaining overall urban permeability.

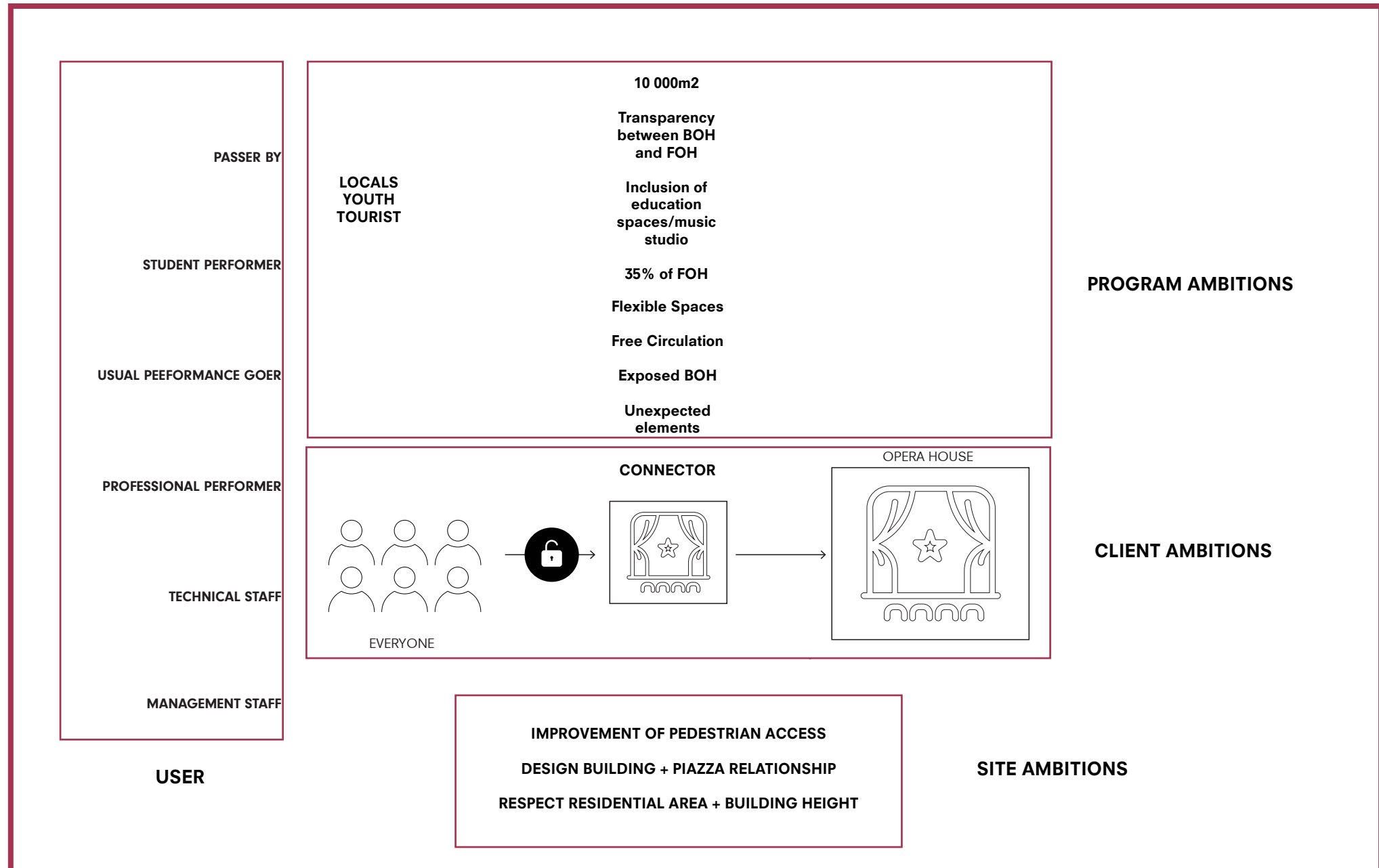
03

RESULTS

After having completed the research across three lenses, it is possible to draw conclusions in the form of ambitions for each of the lens that will also consider the ambitions of the main research question. The ambitions for each lens in combination with the research will inform the design brief, this will ultimately guide and be used as a base of the architectural design of the reimagined Teatro Alla Scala in the city center of Milan. The design brief together with theoretical framework will guide the design.

DESIGN BRIEF DIAGRAM

03 RESULTS

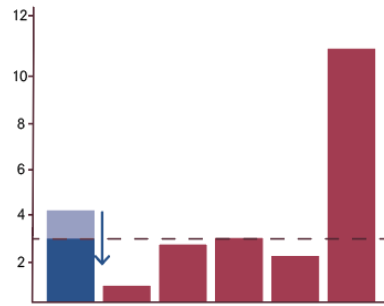


PROGRAM ANALYSIS RESULTS

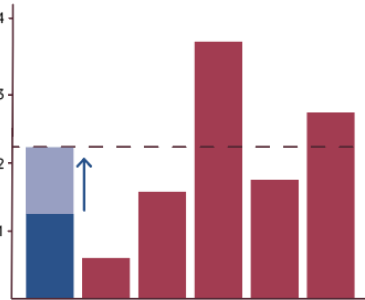
03 RESULTS



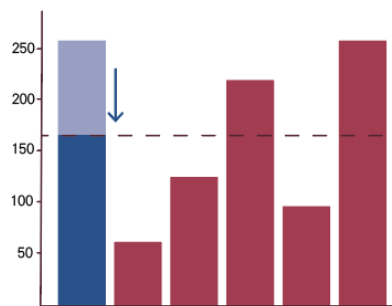
Building Area/Site Area



n of Performance Halls/Site Area

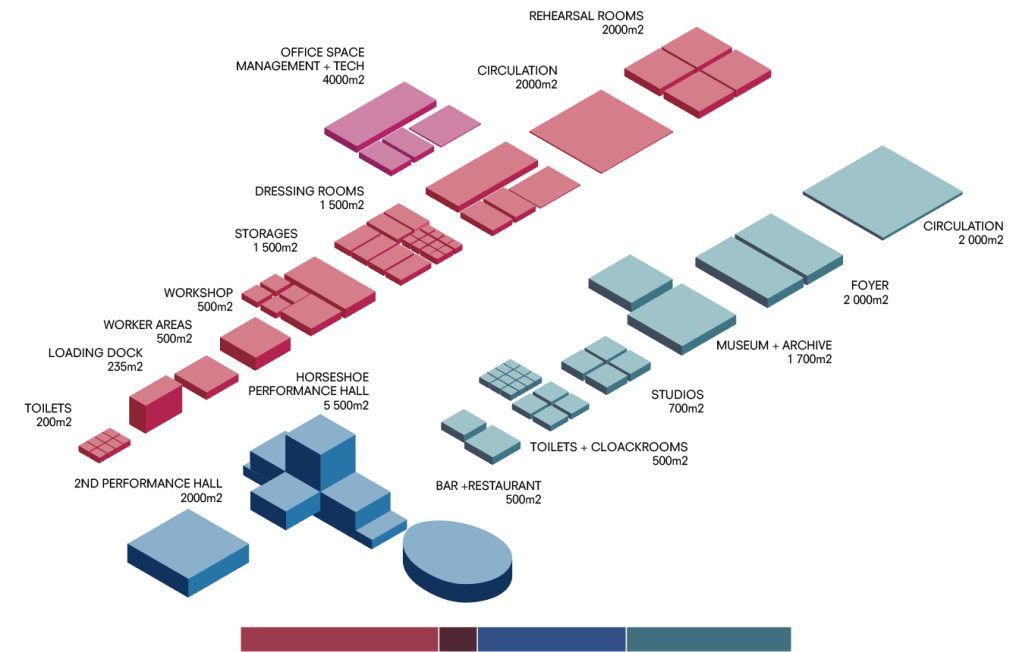


Seating Capacity/Site Area

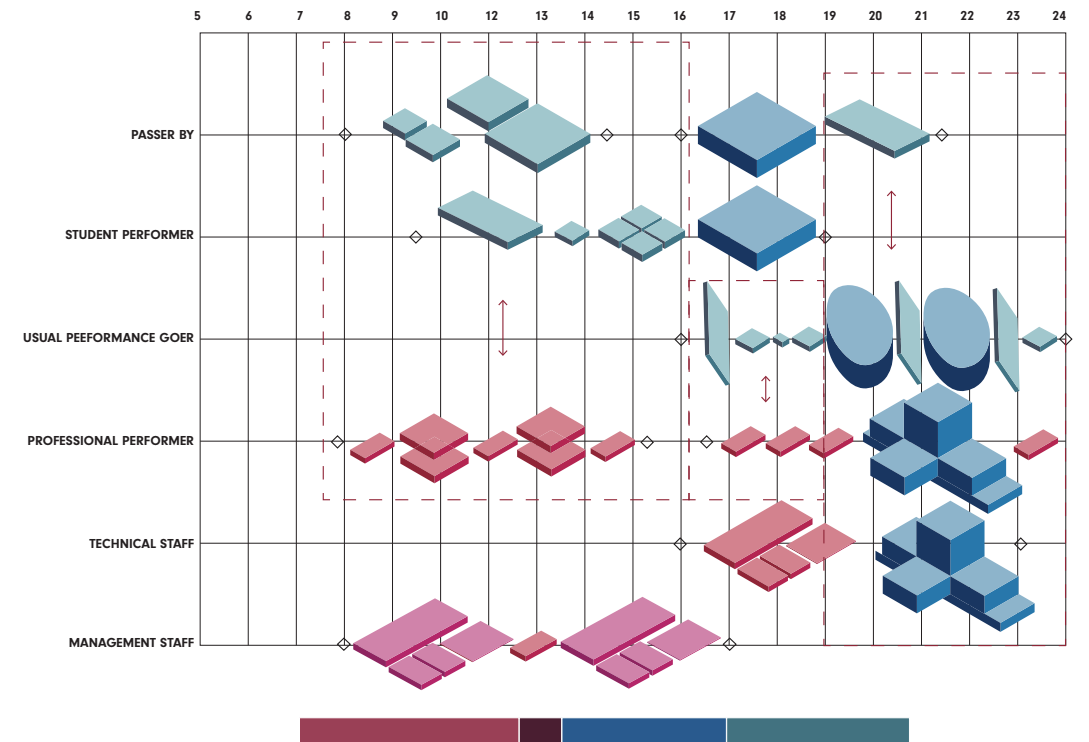


Trends of the contemporary opera house based on the data are as follows:

1. Contemporary buildings tend to be more less efficient with regards to building area to site area ratio. The efficiency is decreased in favour of architectural experience and in favour of designing a low rise building to integrate better within the landscape
2. Tendency of higher number of performing halls offering multiple performances at the same time of different modes, scales.
3. Smaller seating capacity



USER'S FUNCTION VISING PATTERN



CONCLUSIVE PROGRAM

The program is driven by a central ambition: empowerment through architecture and music. It redefines the cultural institution as an inclusive, participatory environment where individuals are encouraged to engage, express, and belong. Therefore the questions that formed the main ambitions of the the pragmatic organization is How can the program arrangement of the building allow for participation/curiosity to learn about classical performance?

Following the research in the previous chapter it was found that

Program Requirements:

1. 3 smaller scale performing venues for better connection. The opera hall is chamber opera for 600 people
2. Inclusion of more public program and exposure of archival collection, museum and rehearsal

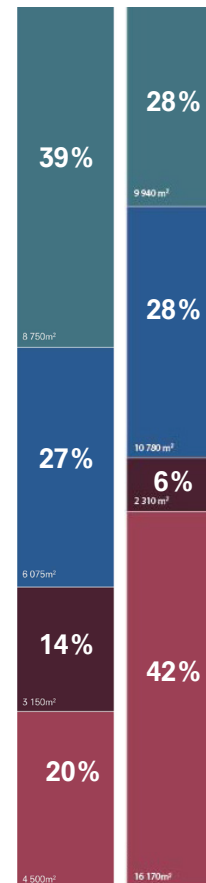
Program Ambitions:

1. Minimize the split between back of the House and front of the house
2. Blend user groups
3. Include spaces that nudge people to learn

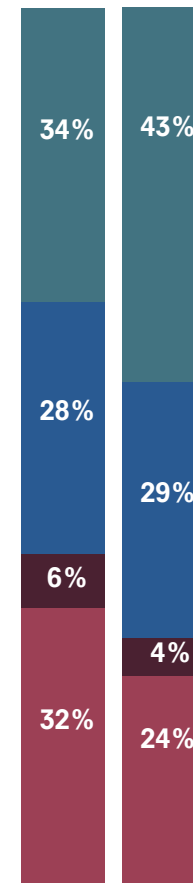
SCALA



CASA OSLO



BEAUSOBRE DALI

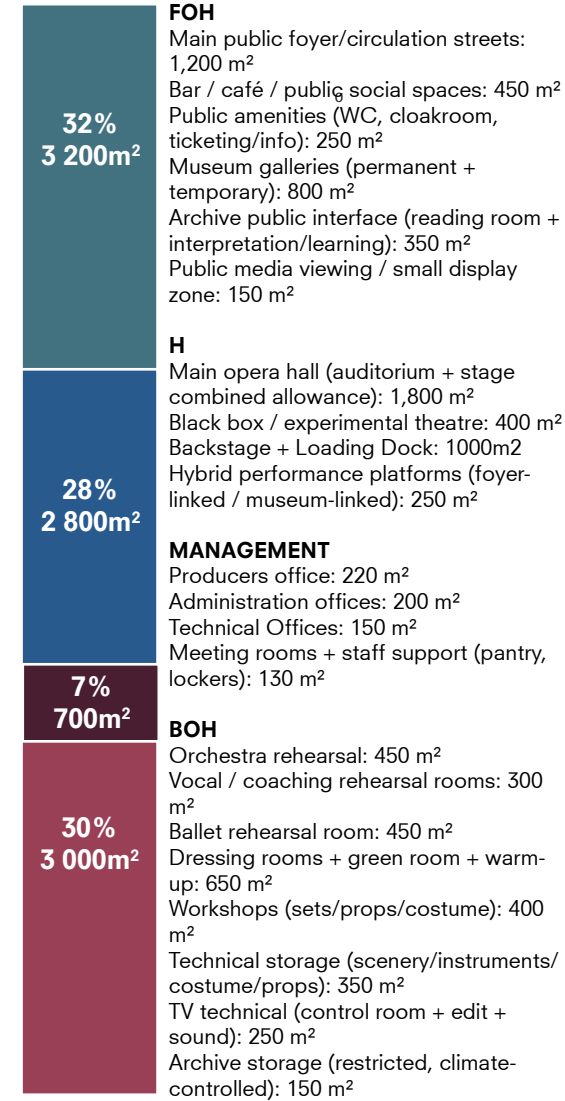


OPERA REQUIREMENTS

SPATIAL REQUIREMENTS

TOTAL: 10 000M²

03 RESULTS



FOH

Main public foyer/circulation streets: 1,200 m²
 Bar / café / public social spaces: 450 m²
 Public amenities (WC, cloakroom, ticketing/info): 250 m²
 Museum galleries (permanent + temporary): 800 m²
 Archive public interface (reading room + interpretation/learning): 350 m²
 Public media viewing / small display zone: 150 m²

H

Main opera hall (auditorium + stage combined allowance): 1,800 m²
 Black box / experimental theatre: 400 m²
 Backstage + Loading Dock: 1000m²
 Hybrid performance platforms (foyer-linked / museum-linked): 250 m²

MANAGEMENT

Producers office: 220 m²
 Administration offices: 200 m²
 Technical Offices: 150 m²
 Meeting rooms + staff support (pantry, lockers): 130 m²

BOH

Orchestra rehearsal: 450 m²
 Vocal / coaching rehearsal rooms: 300 m²
 Ballet rehearsal room: 450 m²
 Dressing rooms + green room + warm-up: 650 m²
 Workshops (sets/props/costume): 400 m²
 Technical storage (scenery/instruments/costume/props): 350 m²
 TV technical (control room + edit + sound): 250 m²
 Archive storage (restricted, climate-controlled): 150 m²

RESTRUCTURED PROGRAM

One of the program ambitions is to minimize the split between BOH, house and FRONT OF THE HOUSE, as it is usually done in the traditional opera. To also integrate the notion of ludic architecture within the program, it was decided to organize the program into levels according to the user/level of interaction with the building.

Levels are arranged as follows:

Level one: Non ticketed users, passers by

Level 2: Curious visitors who are here to learn, aka museum visitors

Level 3: All performers, including students of the academia who can use rehearsal facilities in the building as well as use the blackbox venue to organize more experimental performances

Level 4: Ticketed audience, people who came with a destination in mind, usually people who are already attuned to the classical performance

Level 5: Professional performer facilities

Level 6: Production and Management

Level 5 and 6 are restricted zones for all of the public users.

Open Level: Everyone

LEVEL 3: ALL PERFORMERS

- Black Box Theatre
- Rehearsal Rooms 50%

LEVEL 2: CURIOUS VISITORS

- Museum
- Archive
- Public Scenery Workshop

LEVEL 1: NON TICKETED VISITORS

- Cafe
- La Scala GiftShop
- Ticket Office
- Creche
- Public Bathrooms

OPEN LEVEL: EVERYONE

- Main Entrance
- Open Stage
- Open Seating

LEVEL 6: PRODUCTION + MANAGEMENT

- Storages
- Offices
- Production Workshops
- Loading Dock

LEVEL 5: PROFESSIONAL PERFORMERS

- Stage Support(Backstage, Wings)
 - Changing Rooms
- Fast Rehearsal/Warm Up
- Green Room
- Orchestra Pit
- Hair Make Up
- Rehearsal Rooms 50%

LEVEL 4: TICKETED VISITOR

- Horseshoe Auditorium
- Horseshoe Foyer
- Horseshoe Cloack Rooms
 - Bar

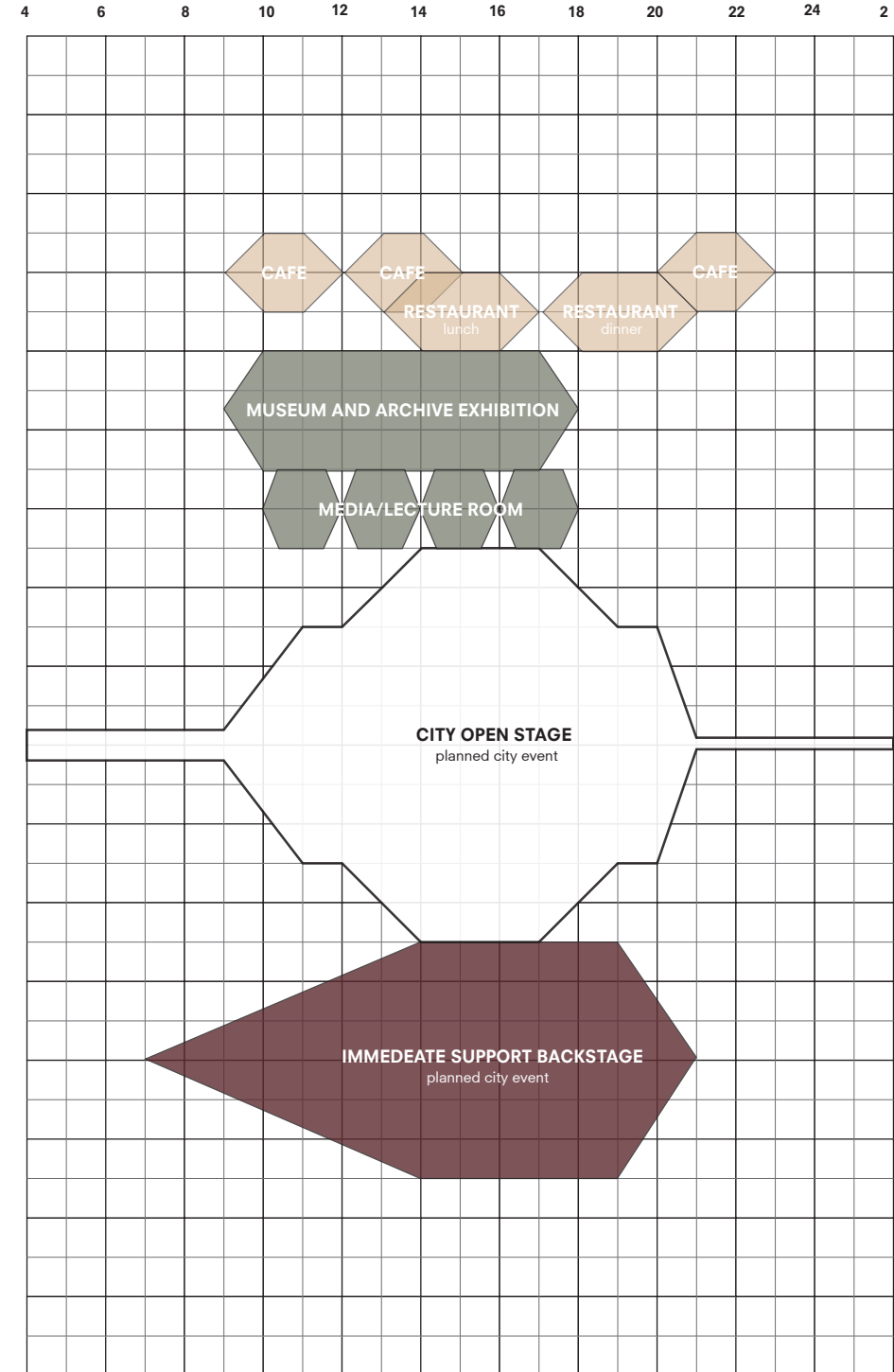
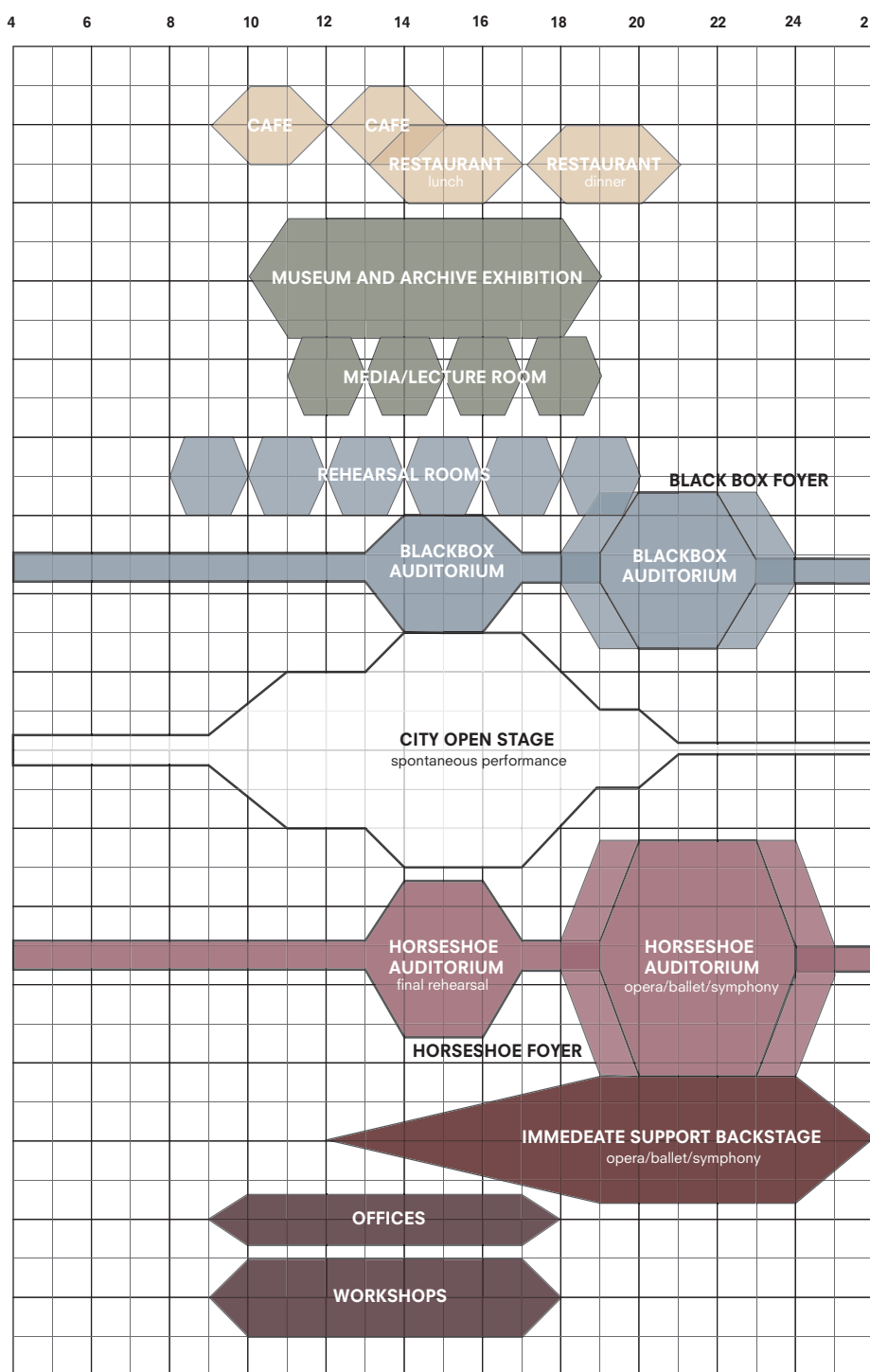
03 RESULTS

PROGRAM CONCEPT

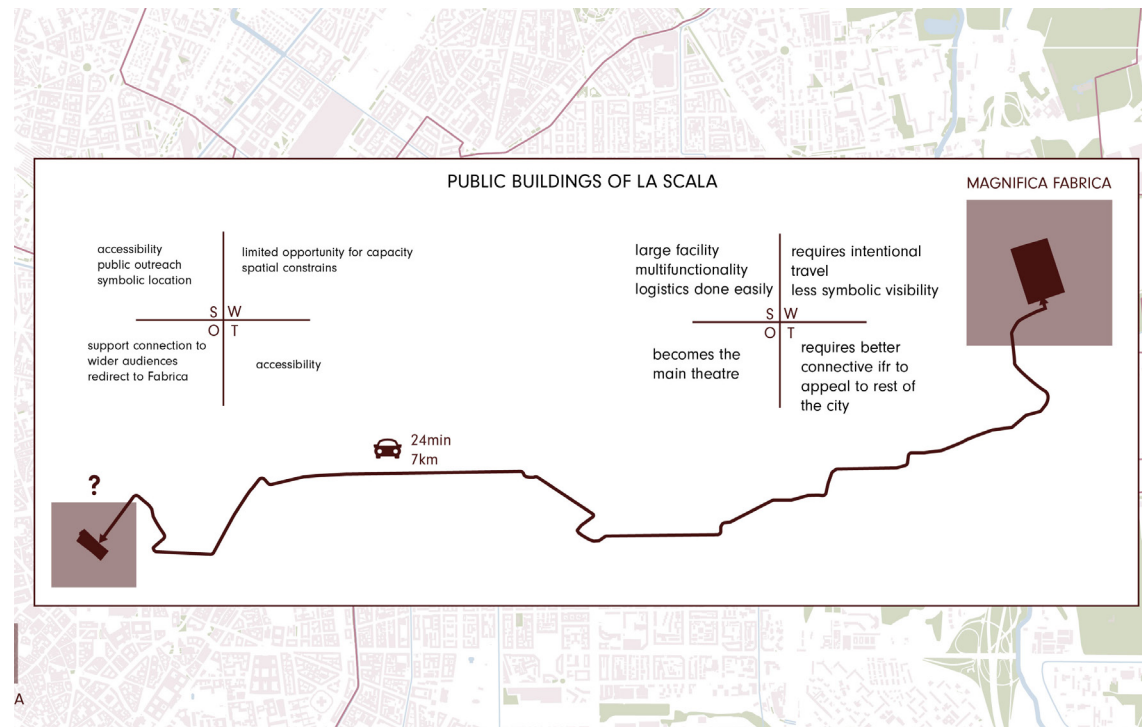
This diagram was done to gather better understanding of what is going to be happening at the same time to better design the relationships between the functions.

This time activity matrix represents the typical weekday of a day in a life of the proposed building design.

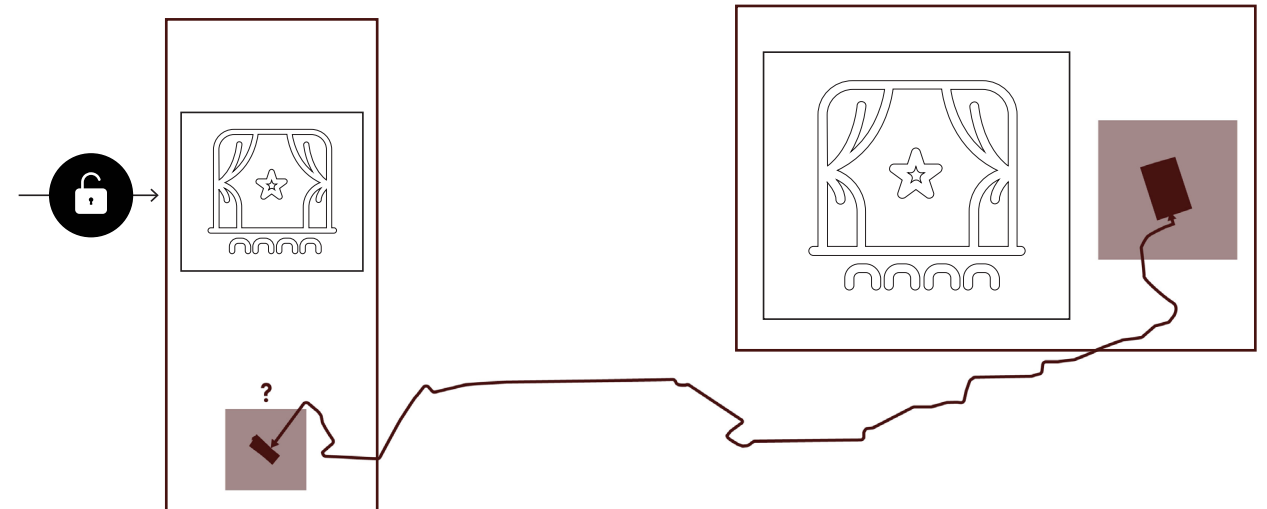
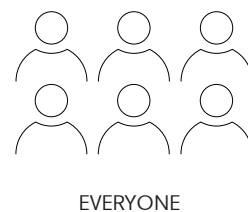
The problem arises at around 18.00-20.00 where all of the stages are active and are in use by different target audience.



CLIENT RESULTS



The patterns suggest that younger audiences can become interested in opera and classical music when access to those genres is easy, and that digital formats can meaningfully expand the base of younger listeners.



CLIENT AMBITIONS

03 RESULTS

1. Make the Brand of la Scala Visible

The client analysis highlights the role of the opera house as the primary public interface of the institution. Fondazione alla Scala operates as a distributed network of production, training, and support facilities, the opera house remains the most visible and symbolically charged component of the organization. A key ambition is therefore to strengthen the building's role as the face of the institutional brand, communicating its cultural relevance to the city center.

2. Protect Craftsmanship of Performance

The client analysis reveals a need to renegotiate the institution's identity in response to contemporary cultural conditions, while preserving its core values of artistic excellence and heritage. This involves rethinking how innovation, education, transparency, and sustainability can be integrated into the public image of the institution.

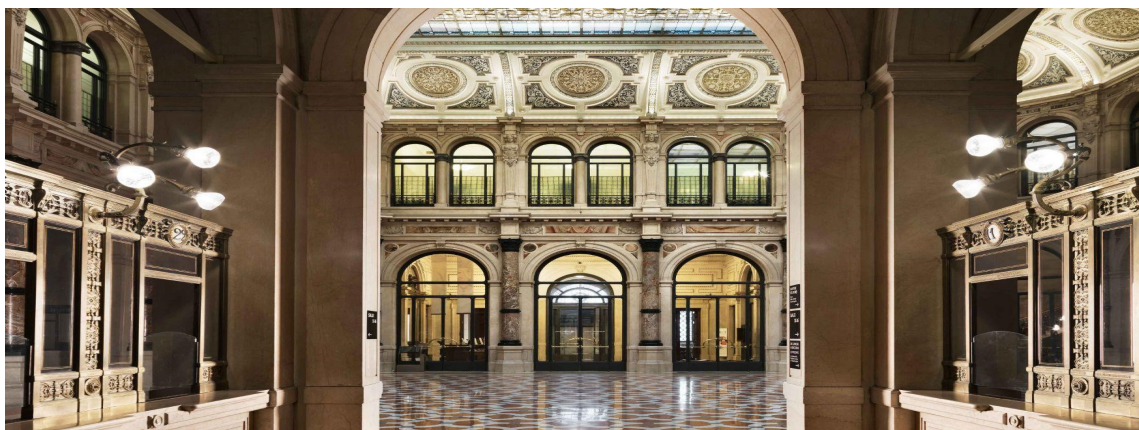
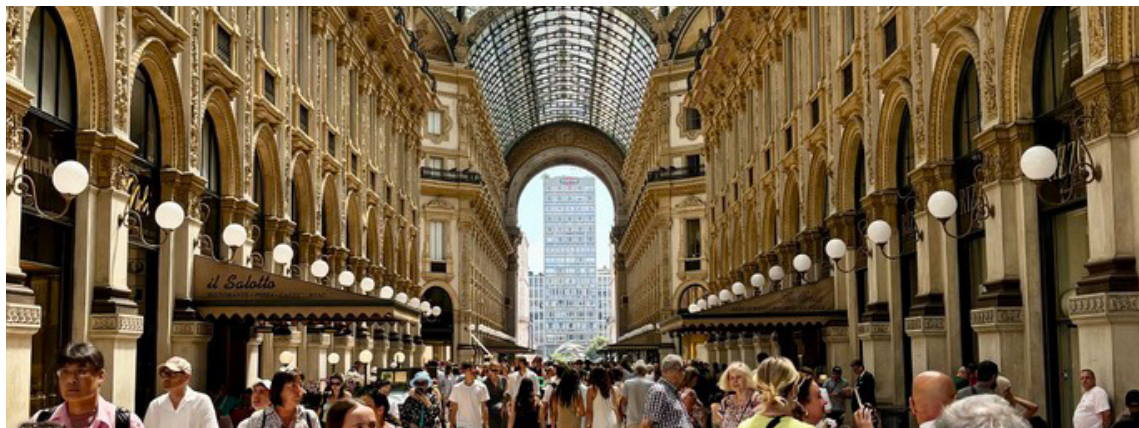
3. Diversify Audiences

Audience research indicates that interest in opera extends beyond traditional audiences, yet engagement remains limited due to perceived thresholds related to access, familiarity, and belonging. A key client ambition derived from this analysis is to broaden the spectrum of audiences engaging with the institution. This ambition focuses on creating conditions for first-time, informal, and repeat encounters, supporting diversification without redefining the artistic content of opera itself.

CLIENT CONCEPT

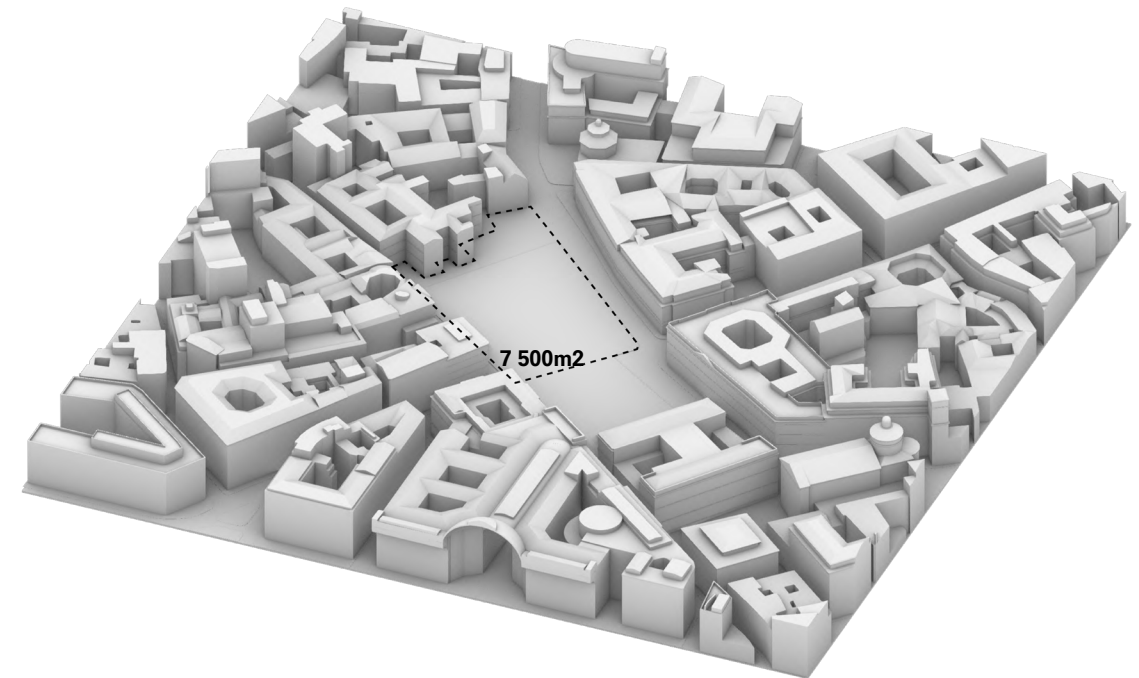


SYMMETRY AND RHYTHM OF THE SURROUNDINGS



SITE AMBITIONS

03 RESULTS

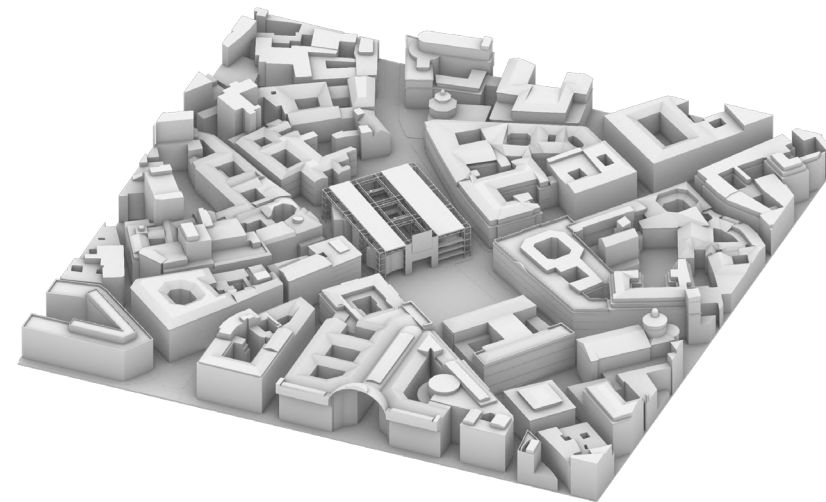
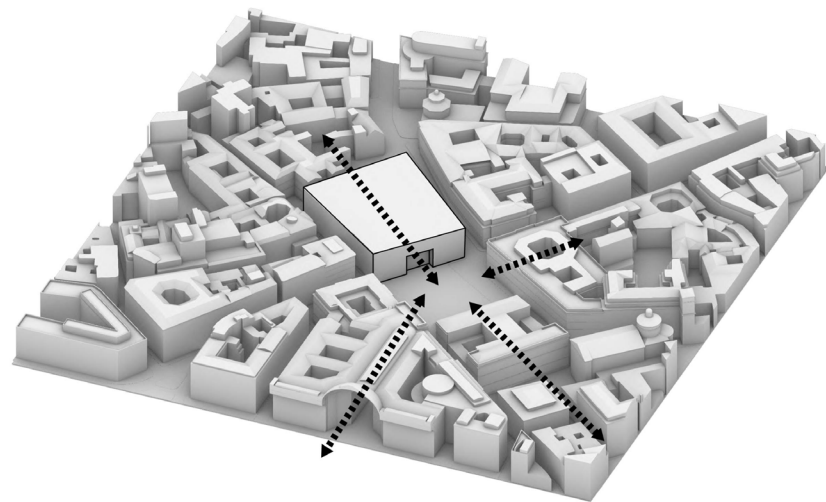
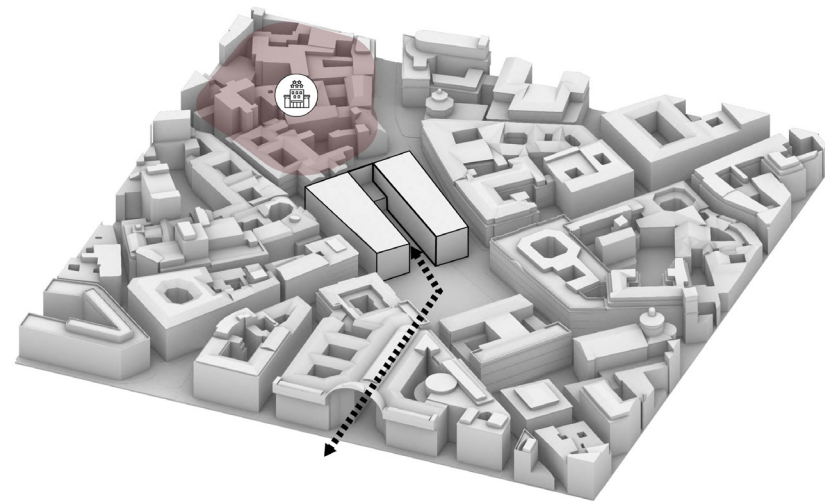
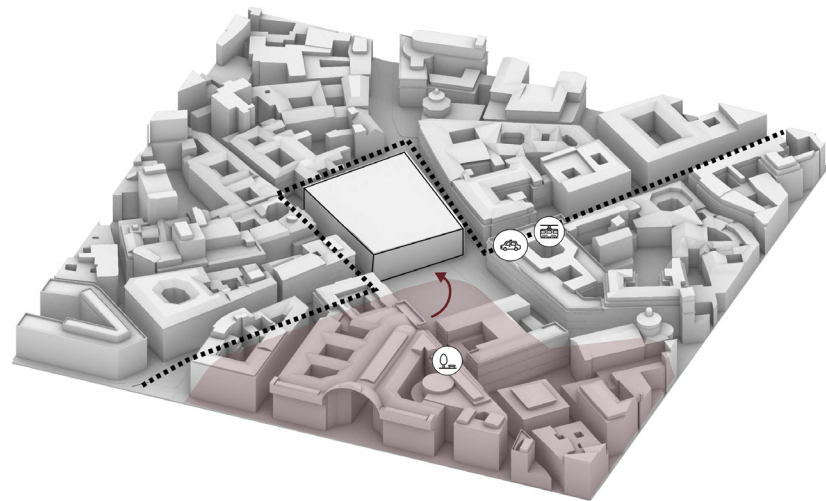


According to site conditions the design should aim to respect:

1. Monumental surroundings of the plot: Particularly height of 27m and sightlines
2. Symmetry/harmony of the surroundings, while possibly adding its own twist to it
3. Integrate within the urban path of the piazza

4. Improved safety and pedestrian access to the building

SITE CONCEPT

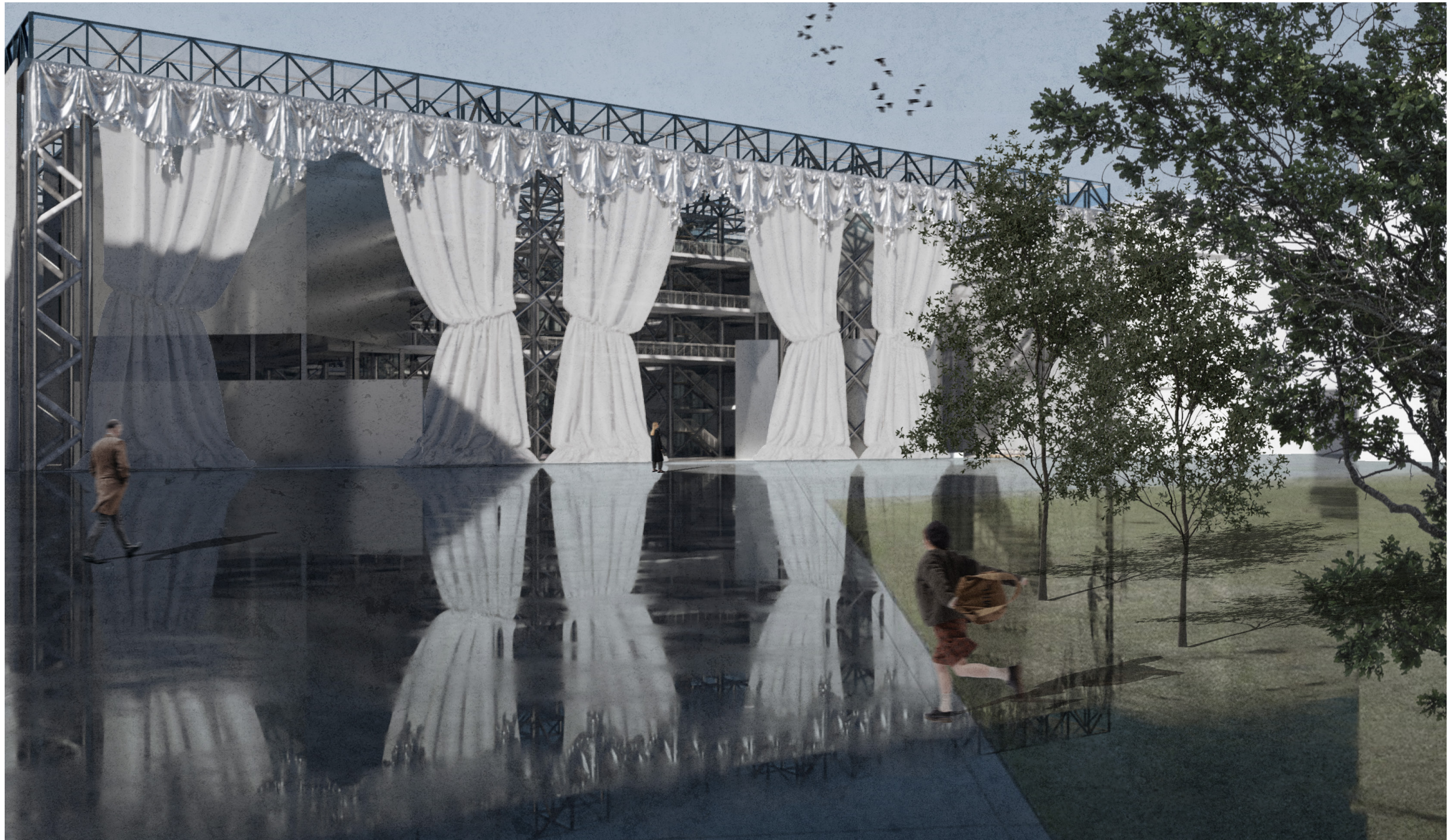


04 CONCLUSION

As a conclusion of the completed research, the final design will be shown and discussed in the following chapter.

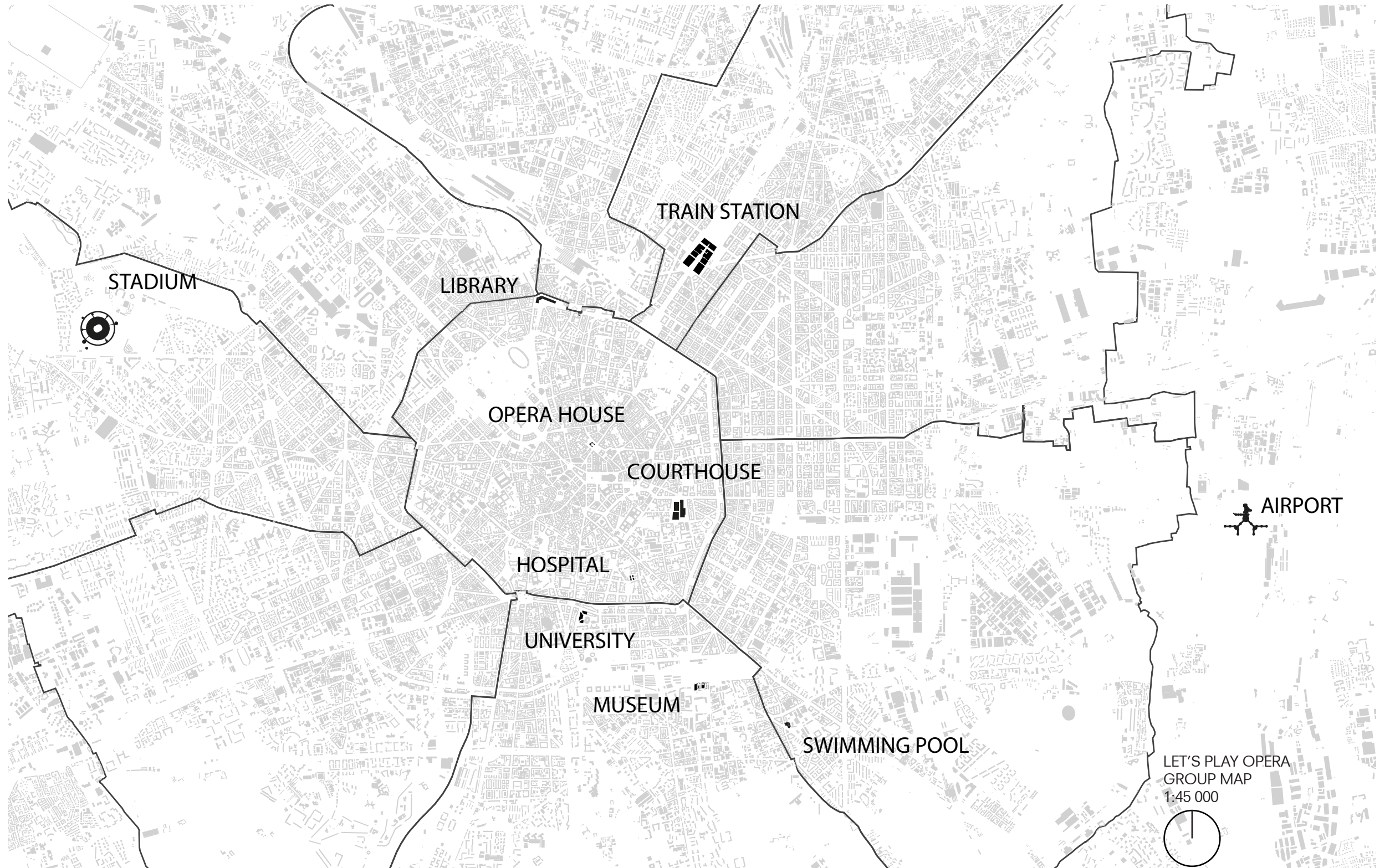
FINAL DESIGN

04 CONCLUSIONS



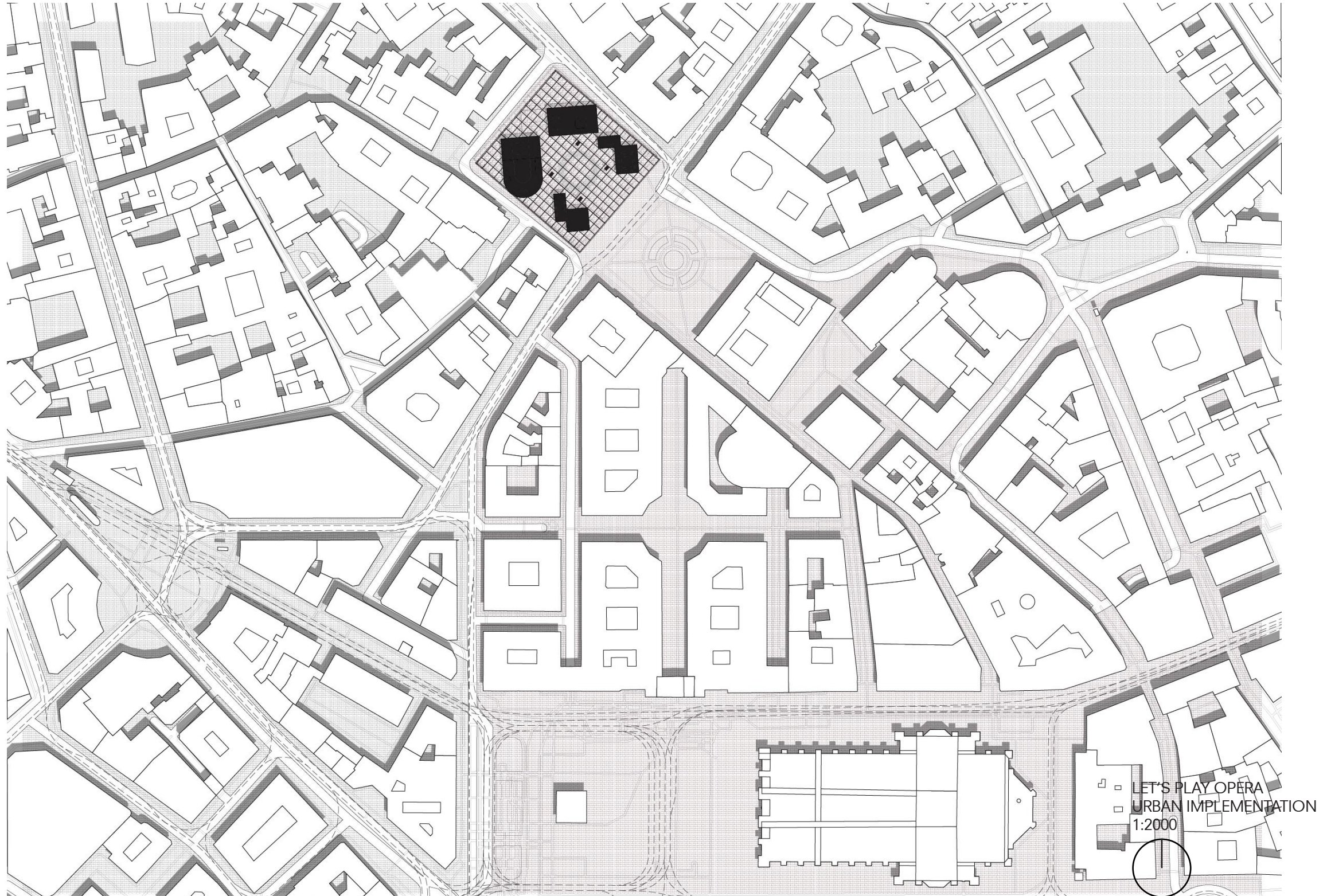
FINAL DESIGN: GROUP URBAN IMPLEMENTATION

04 CONCLUSIONS

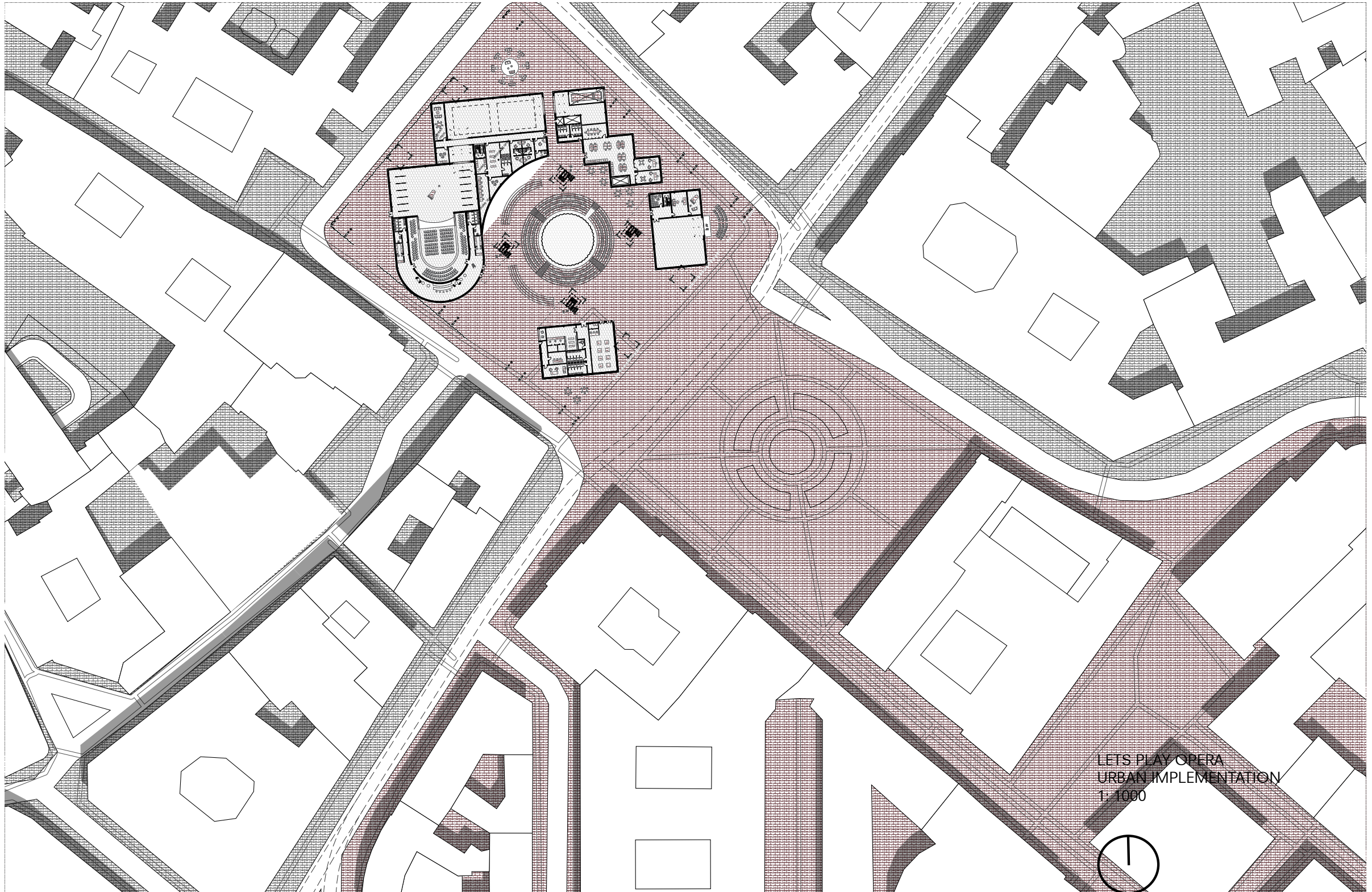


FINAL DESIGN: URBAN IMPLEMENTATION

04 CONCLUSIONS

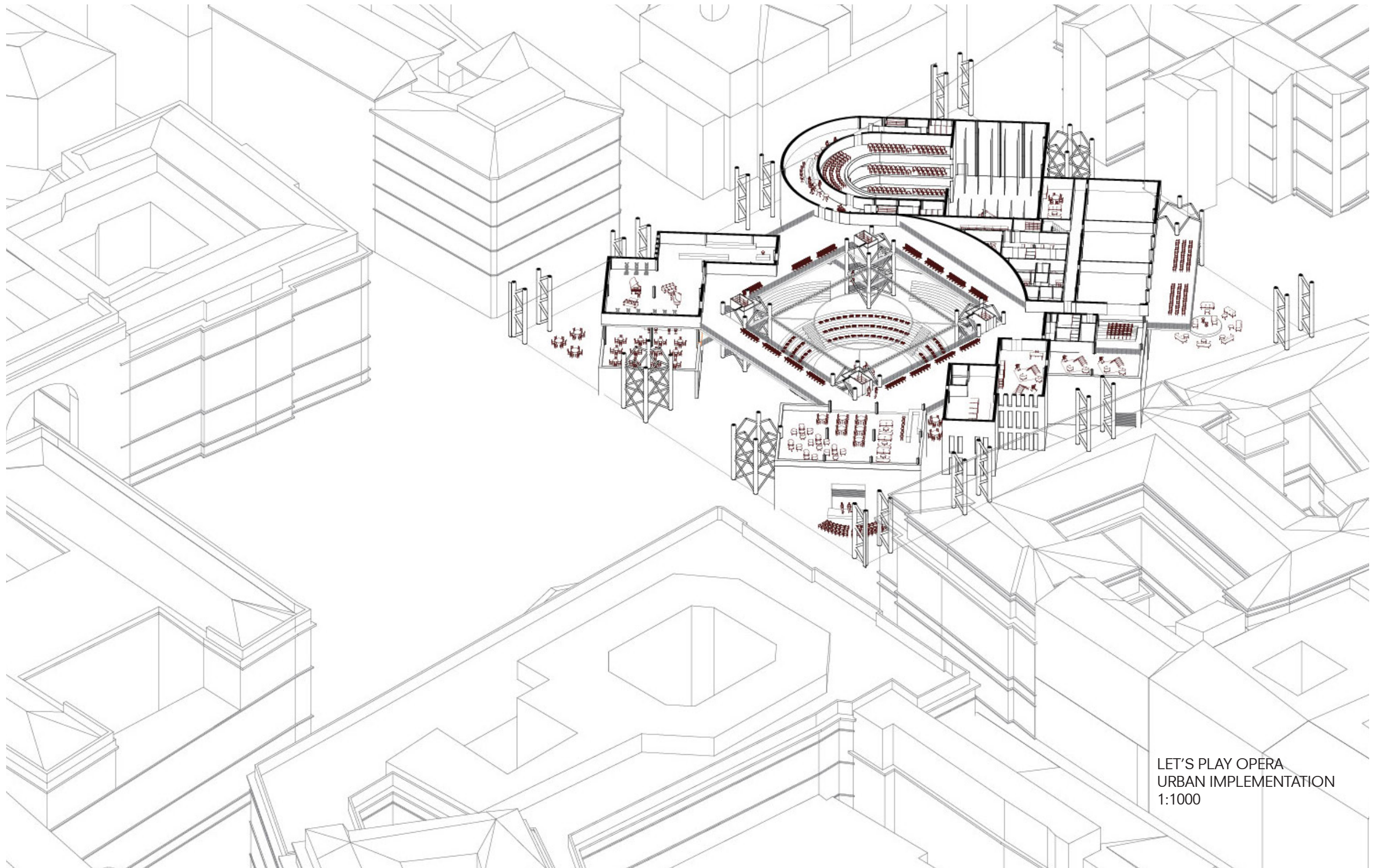


FINAL DESIGN: SITE PLAN



LETS PLAY OPERA
URBAN IMPLEMENTATION
1:1000

FINAL DESIGN: SITE PLAN AXONOMETRY

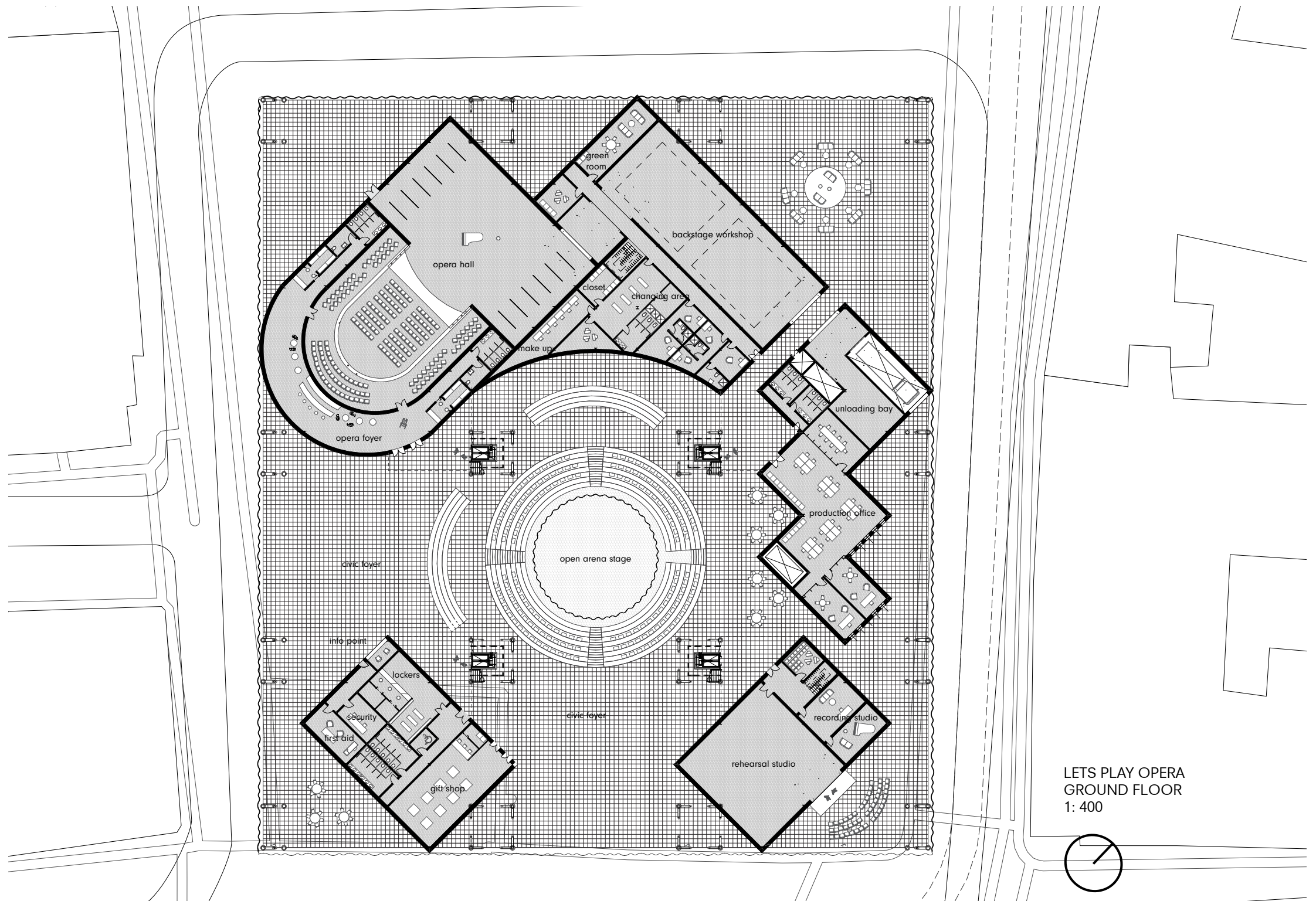


LET'S PLAY OPERA
URBAN IMPLEMENTATION
1:1000

FINAL DESIGN: VIEWS OUTSIDE

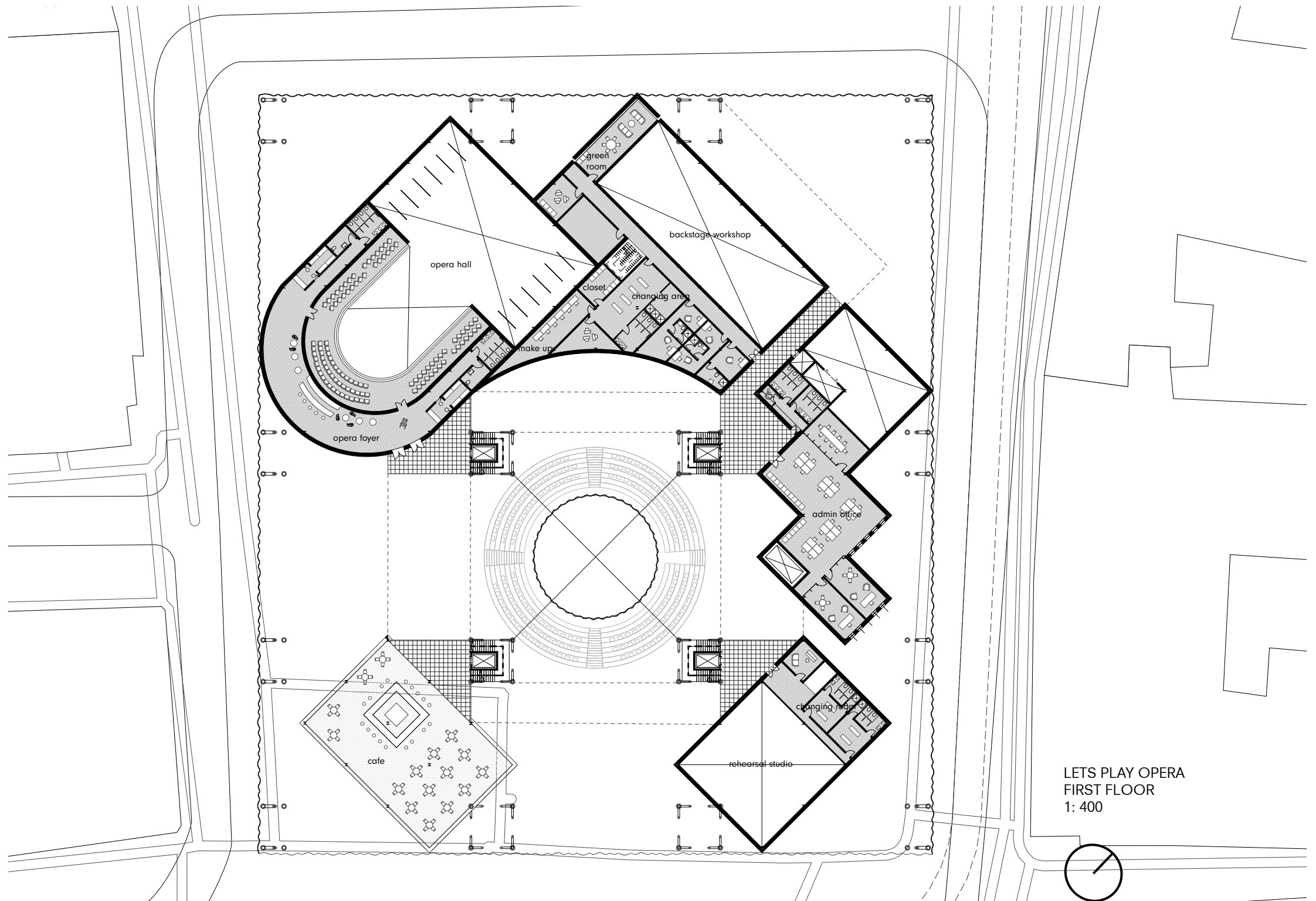


FINAL DESIGN: GROUND FLOOR



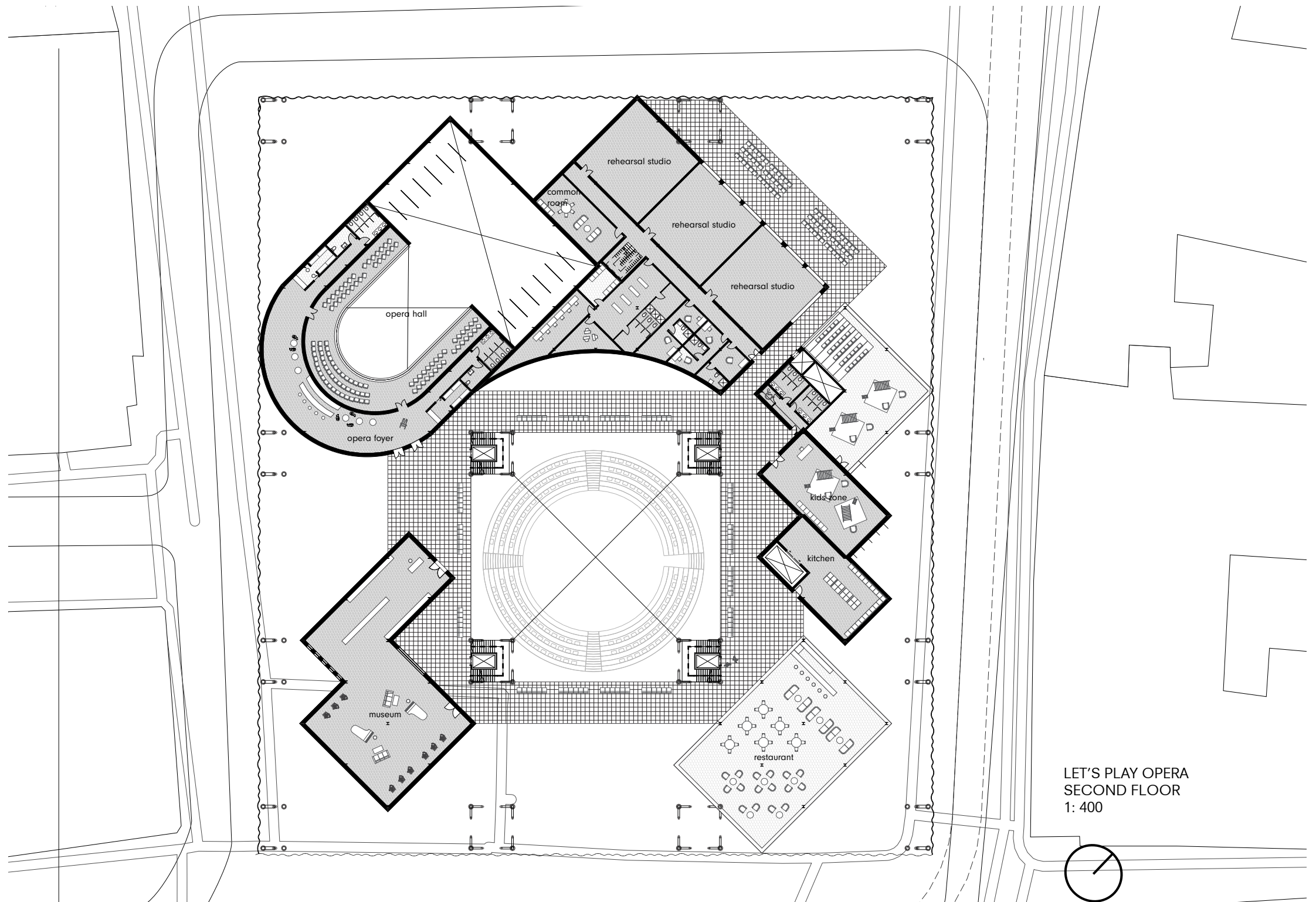
LET'S PLAY OPERA
GROUND FLOOR
1: 400

FINAL DESIGN: FIRST FLOOR

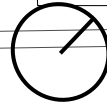


LETS PLAY OPERA
FIRST FLOOR
1: 400

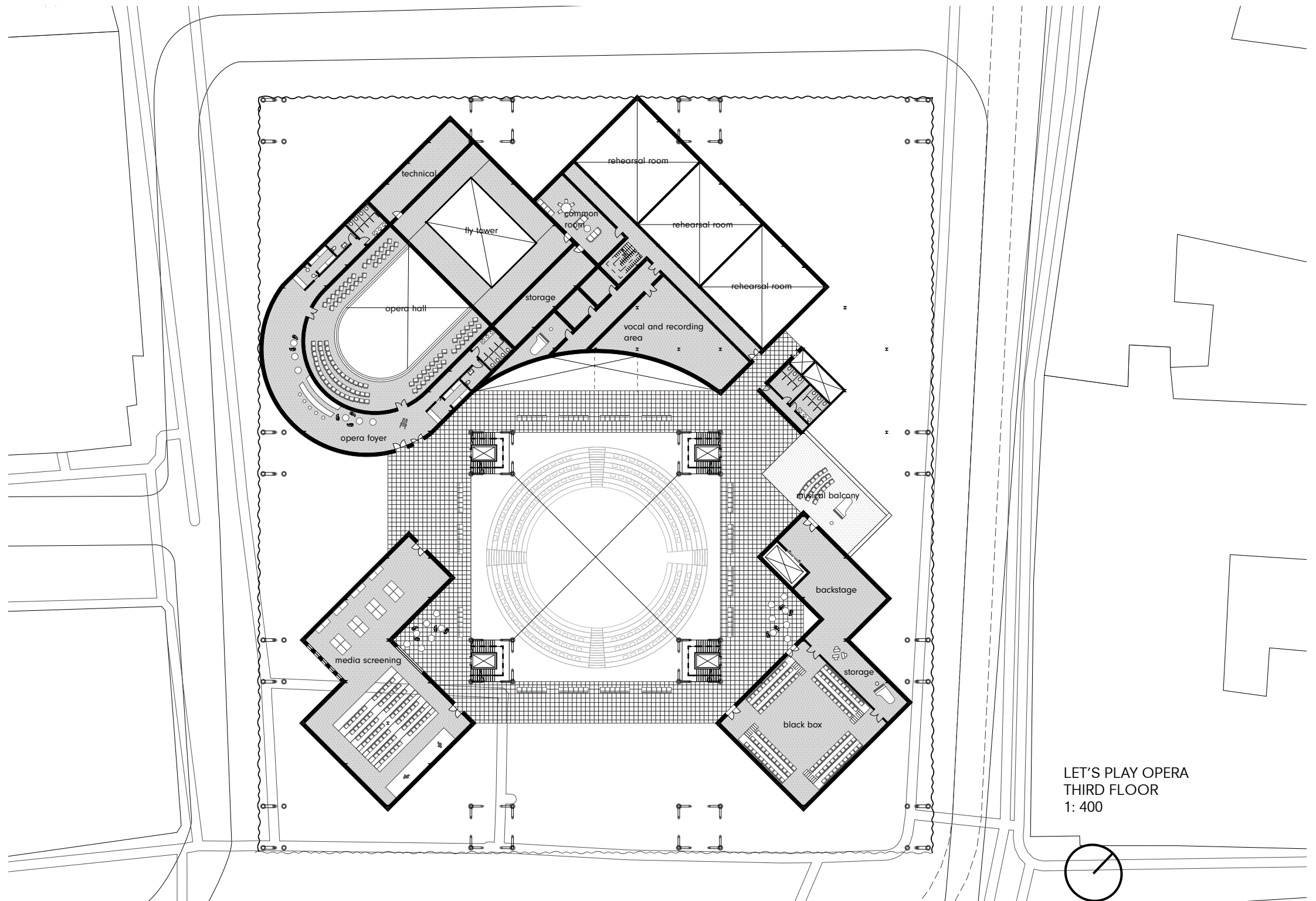
FINAL DESIGN: SECOND FLOOR



LET'S PLAY OPERA
SECOND FLOOR
1: 400

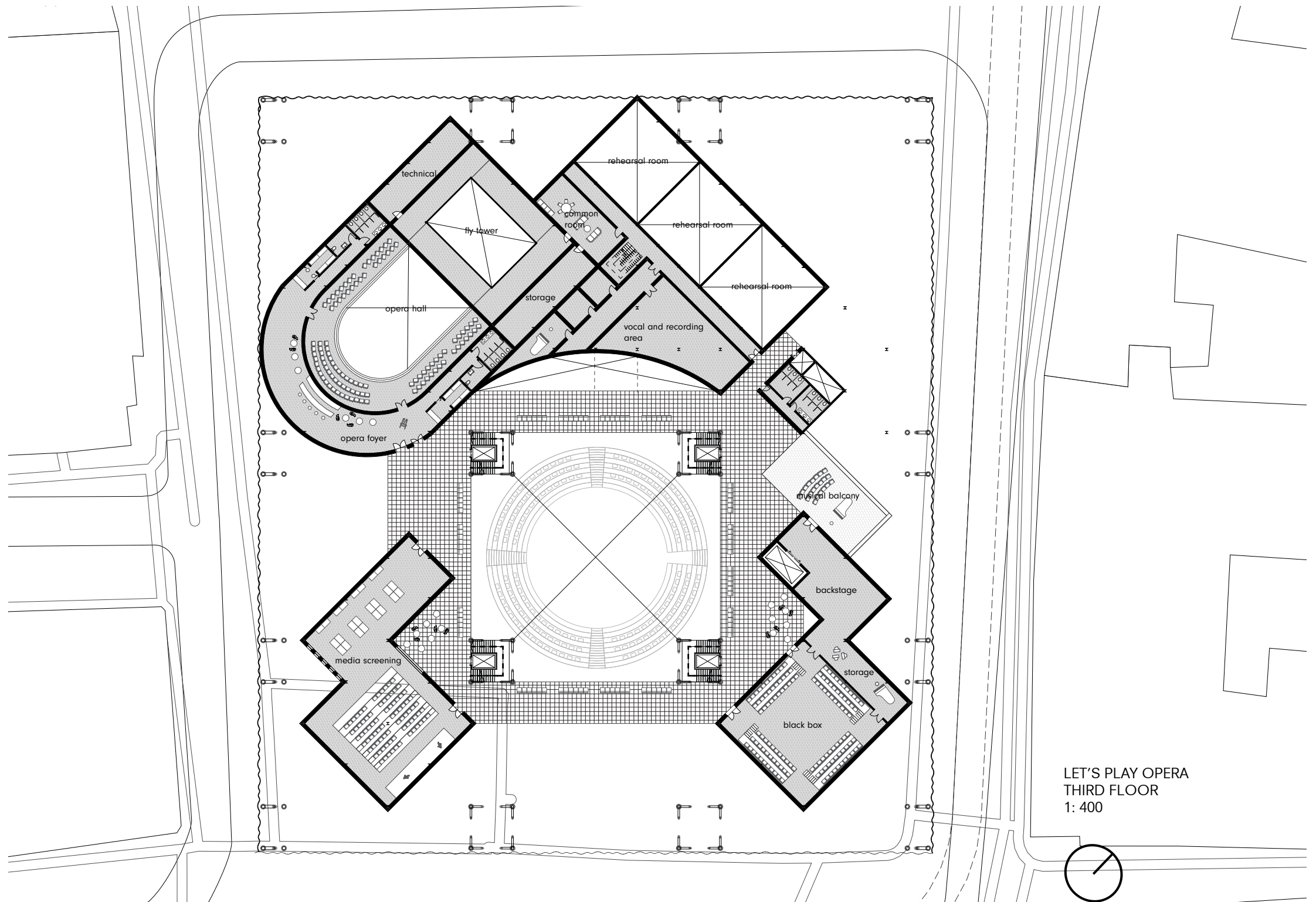


FINAL DESIGN: SECOND FLOOR



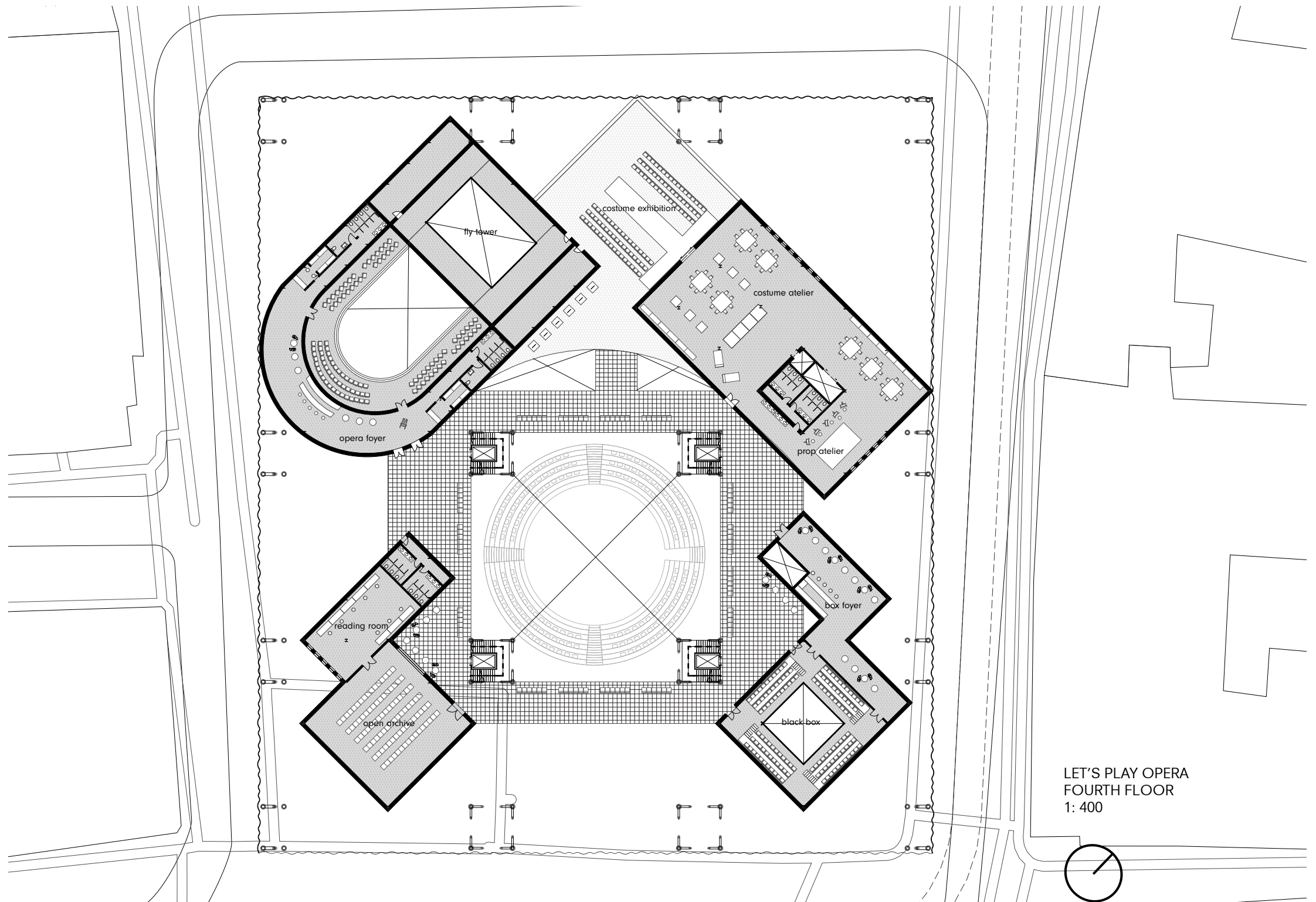
LET'S PLAY OPERA
THIRD FLOOR
1: 400

FINAL DESIGN: THIRD FLOOR



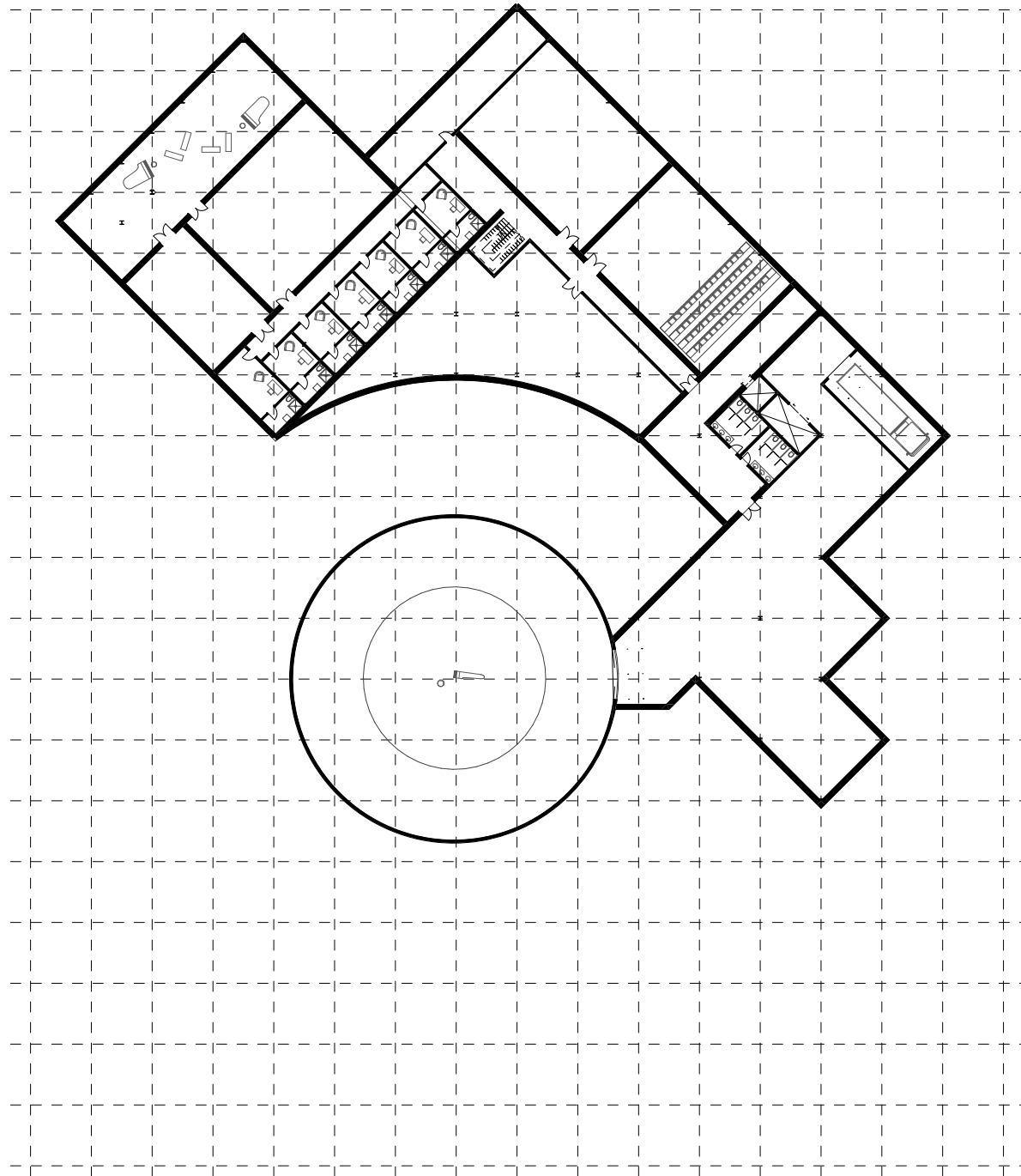
LET'S PLAY OPERA
THIRD FLOOR
1: 400

FINAL DESIGN: FOURTH FLOOR

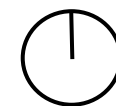


LET'S PLAY OPERA
FOURTH FLOOR
1: 400

FINAL DESIGN: BASEMENT, GRID



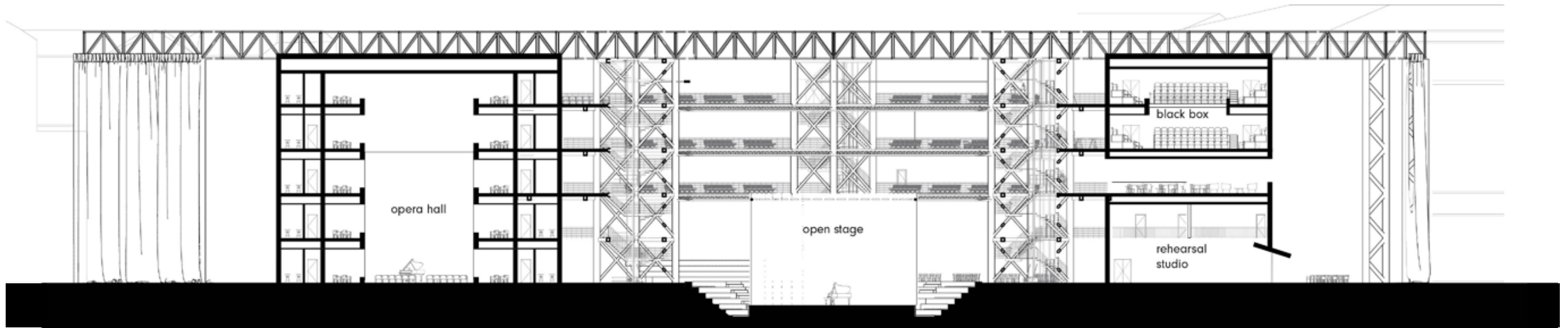
LET'S PLAY OPERA
BASEMENT PLAN
1:400



FINAL DESIGN: INTERIOR VISUALISATION



FINAL DESIGN: LONGITUDONAL SECTION

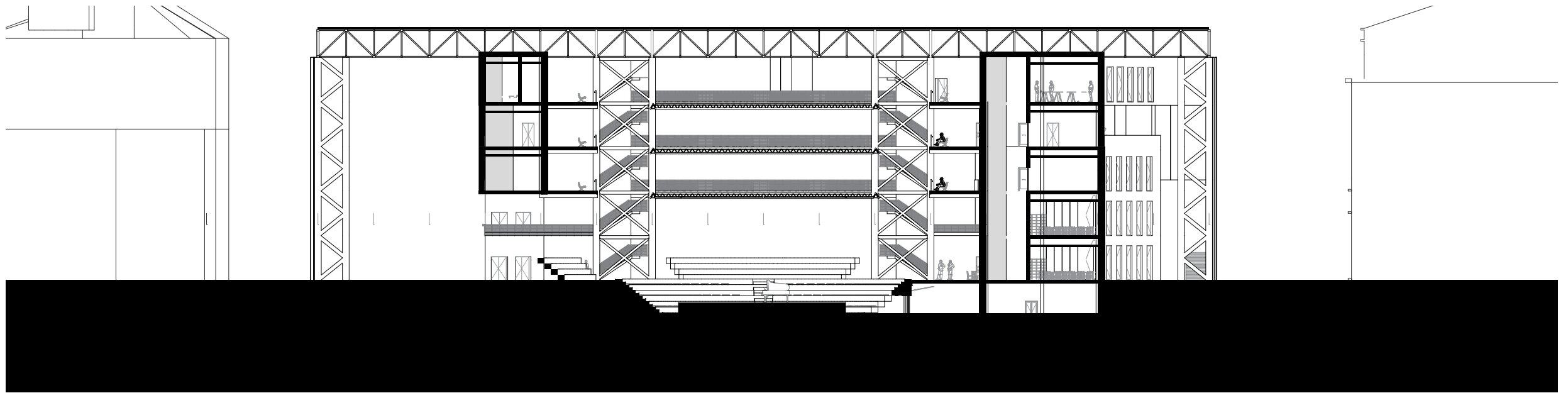


LET'S PLAY OPERA
SECTION
1:400

FINAL DESIGN: INTERIOR VISUALISATION

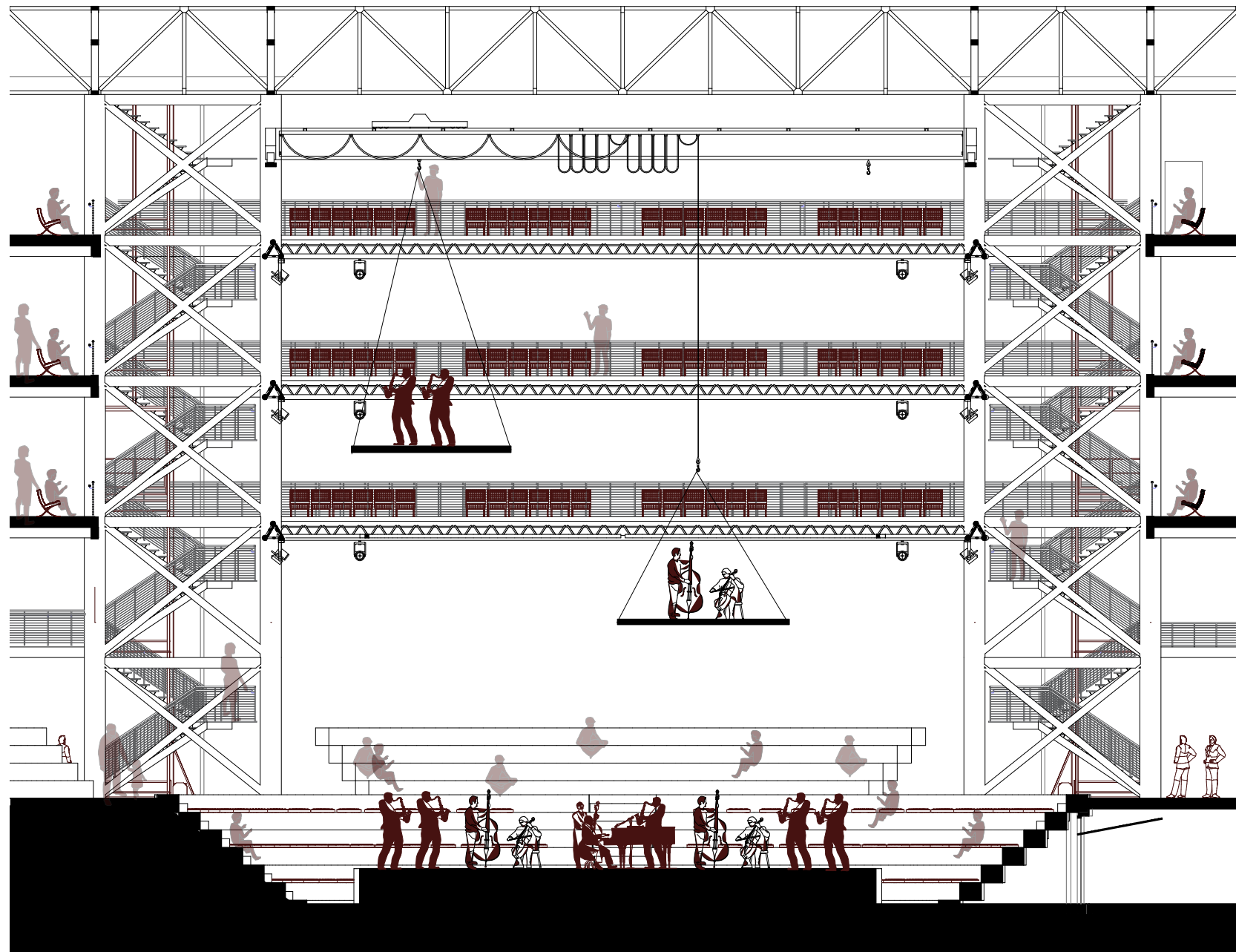


FINAL DESIGN: CROSS SECTION



LET'S PLAY OPERA
SECTION
1:400

FINAL DESIGN: OPEN STAGE

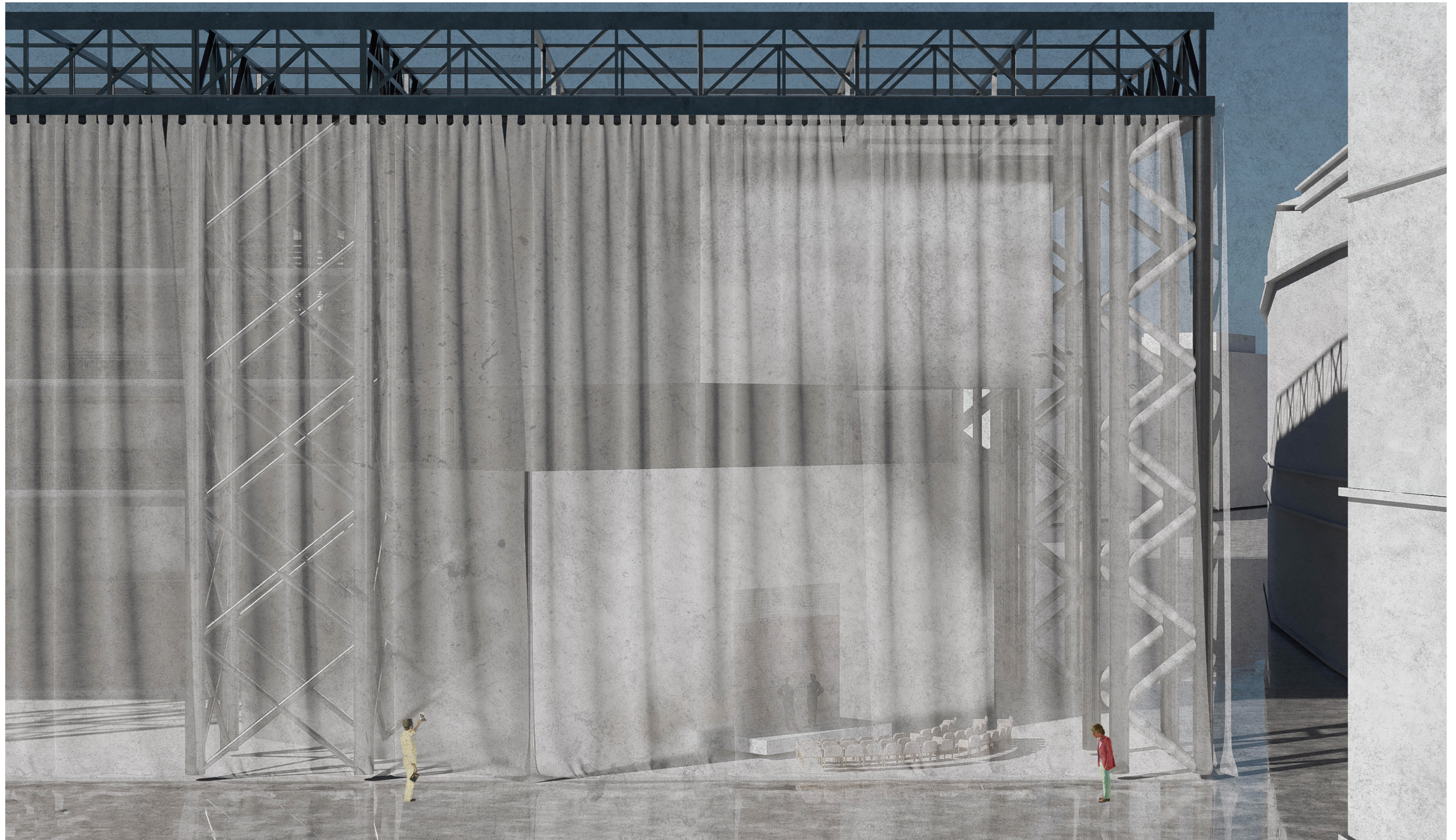


LET'S PLAY OPERA
INTERIOR FRAGMENT
1:100

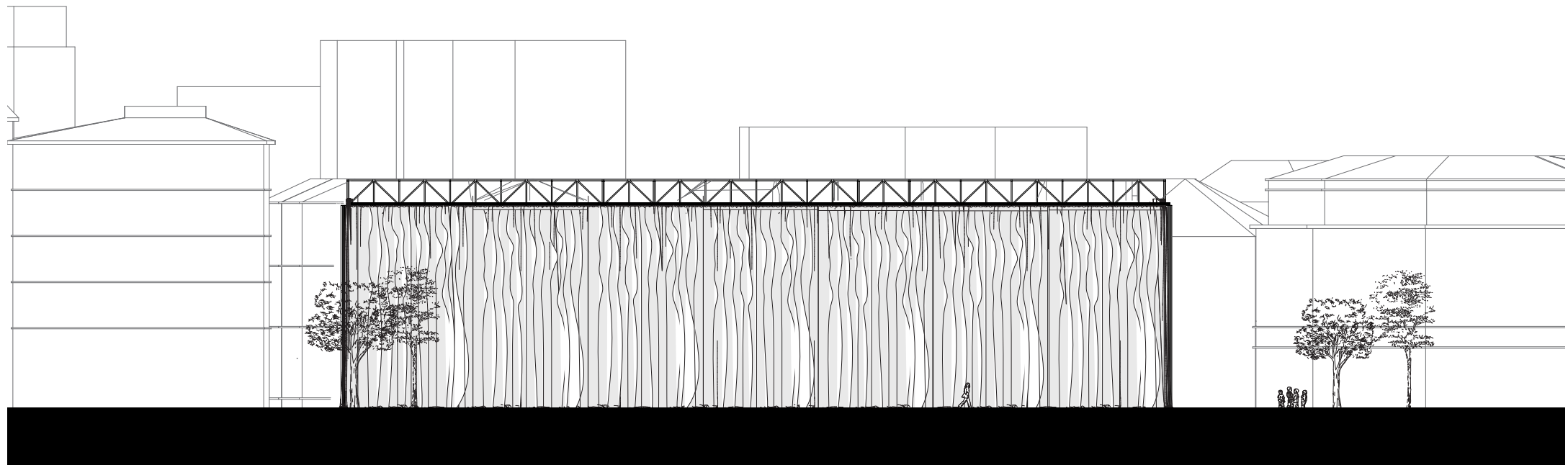
FINAL DESIGN: OPEN STAGE



FINAL DESIGN: EXTERIOR VISUALISATION

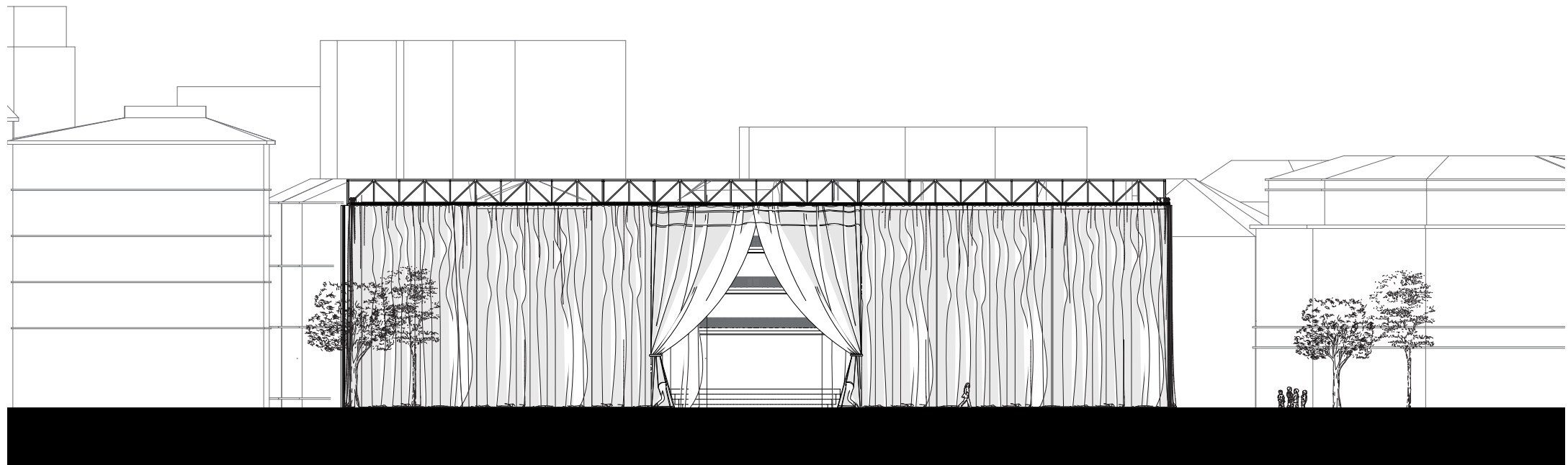


FINAL DESIGN: ELEVATION CLOSED



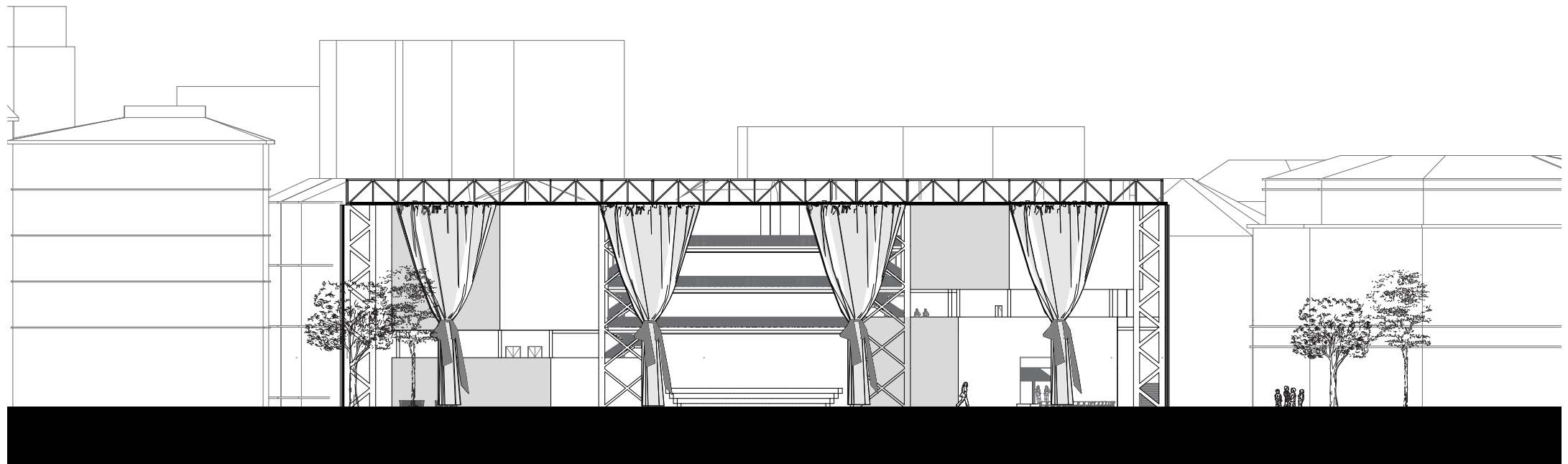
LET'S PLAY OPERA
SOUTH-WEST ELEVATION
1:400

FINAL DESIGN: ELEVATION SELECTIVELY OPEN



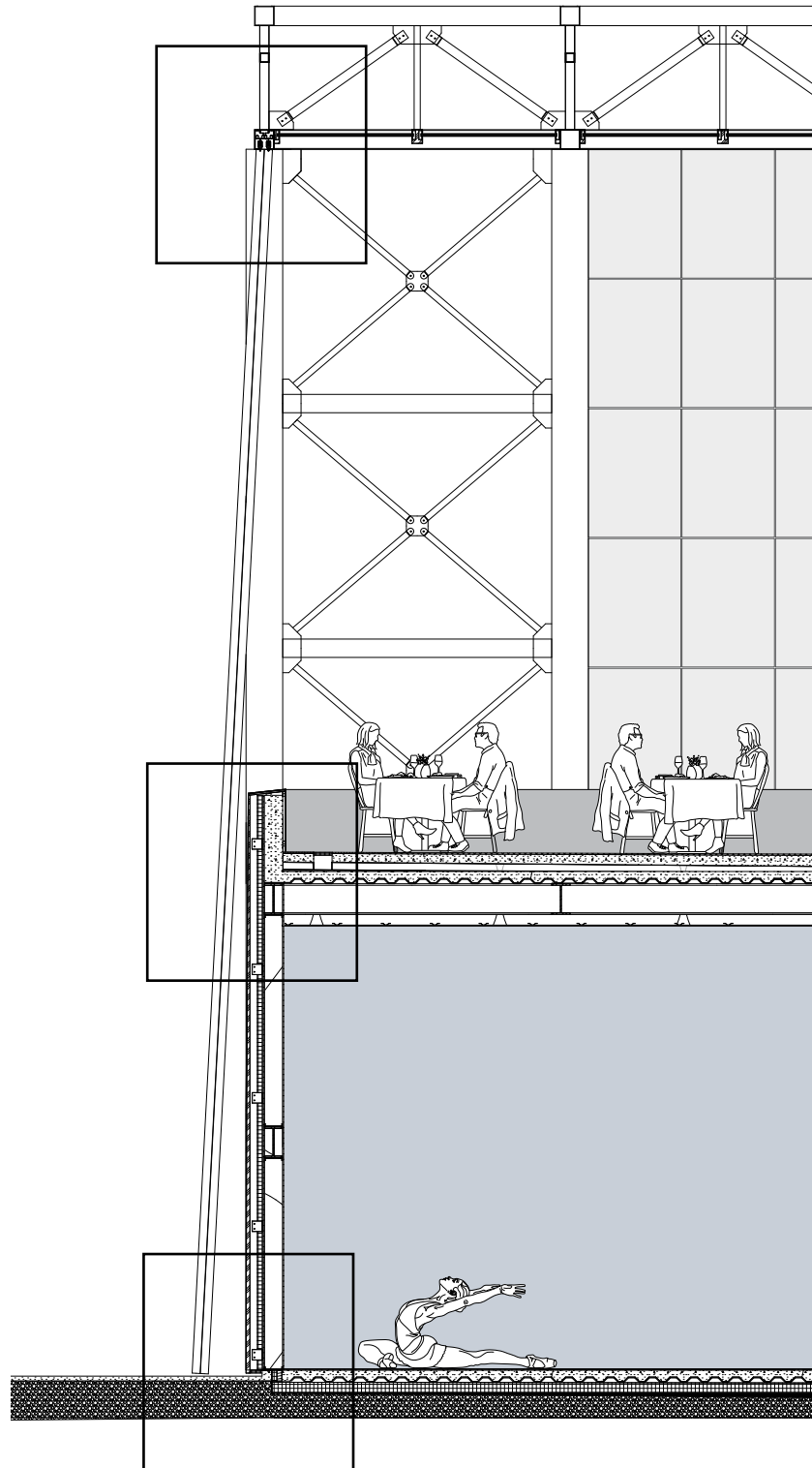
LET'S PLAY OPERA
SOUTH-WEST ELEVATION
1:400

FINAL DESIGN: ELEVATION FULLY OPEN



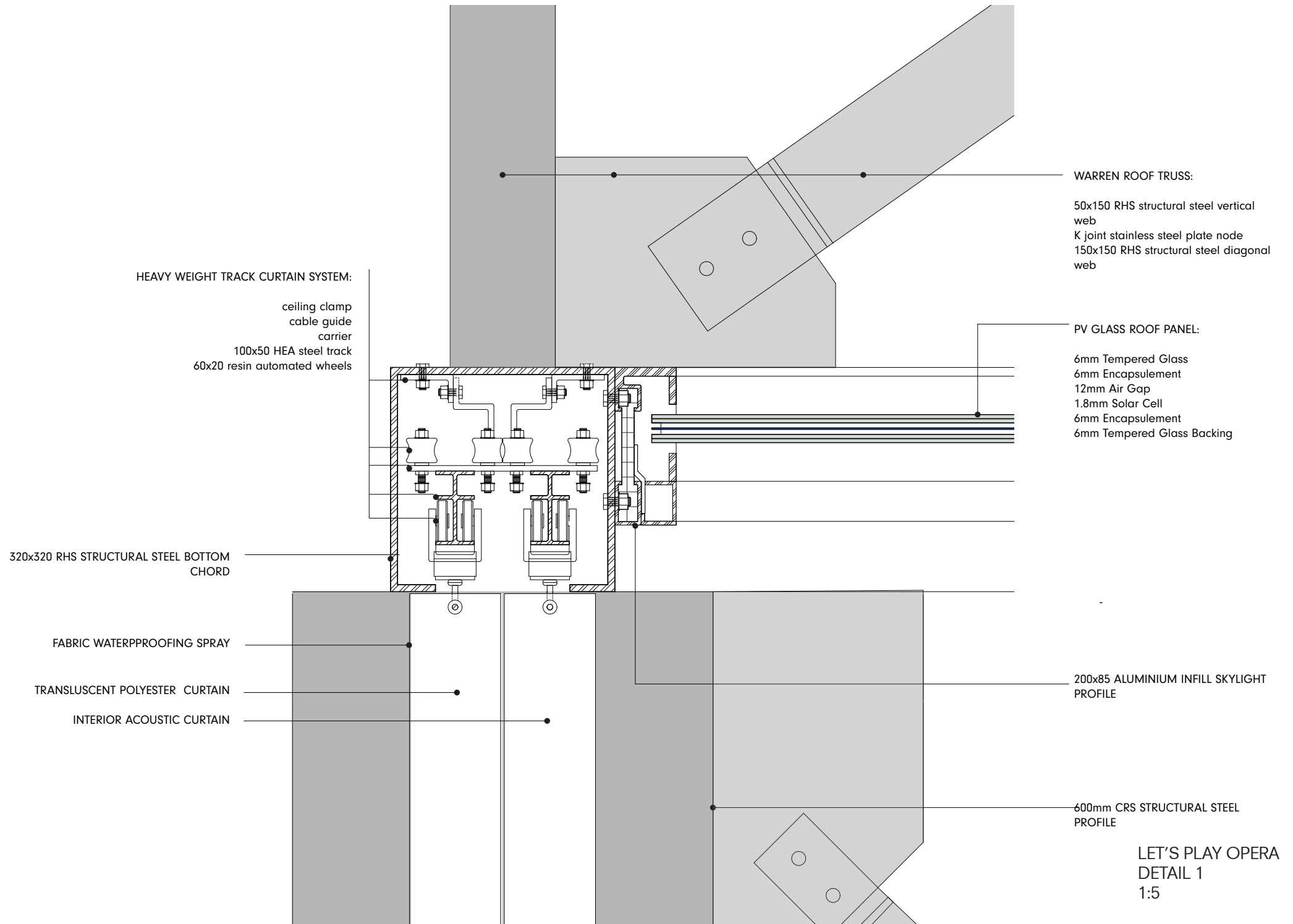
LET'S PLAY OPERA
SOUTH-WEST ELEVATION
1:400

FINAL DESIGN: FRAGMENT

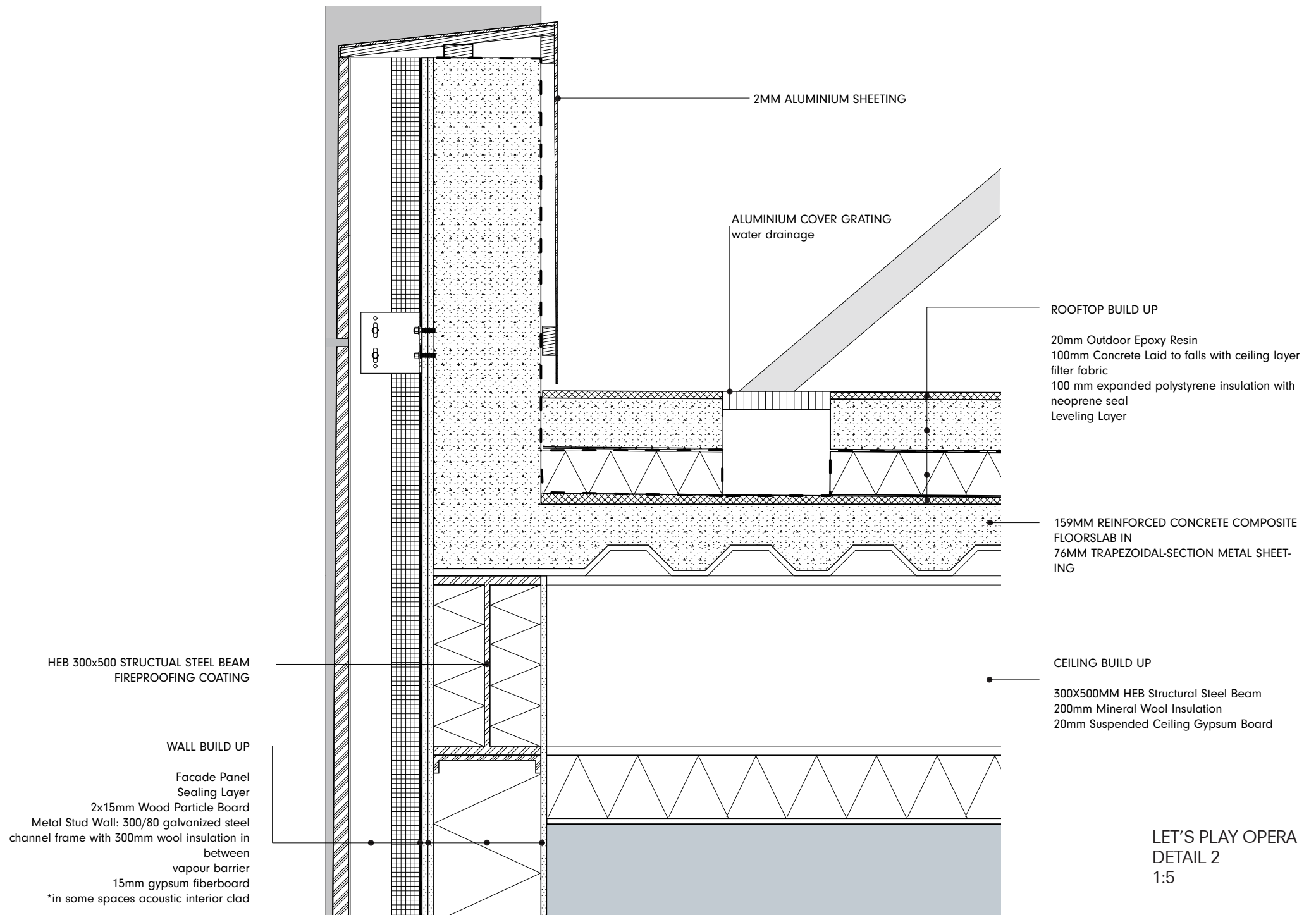


LET'S PLAY OPERA
FACADE FRAGMENT
1:100

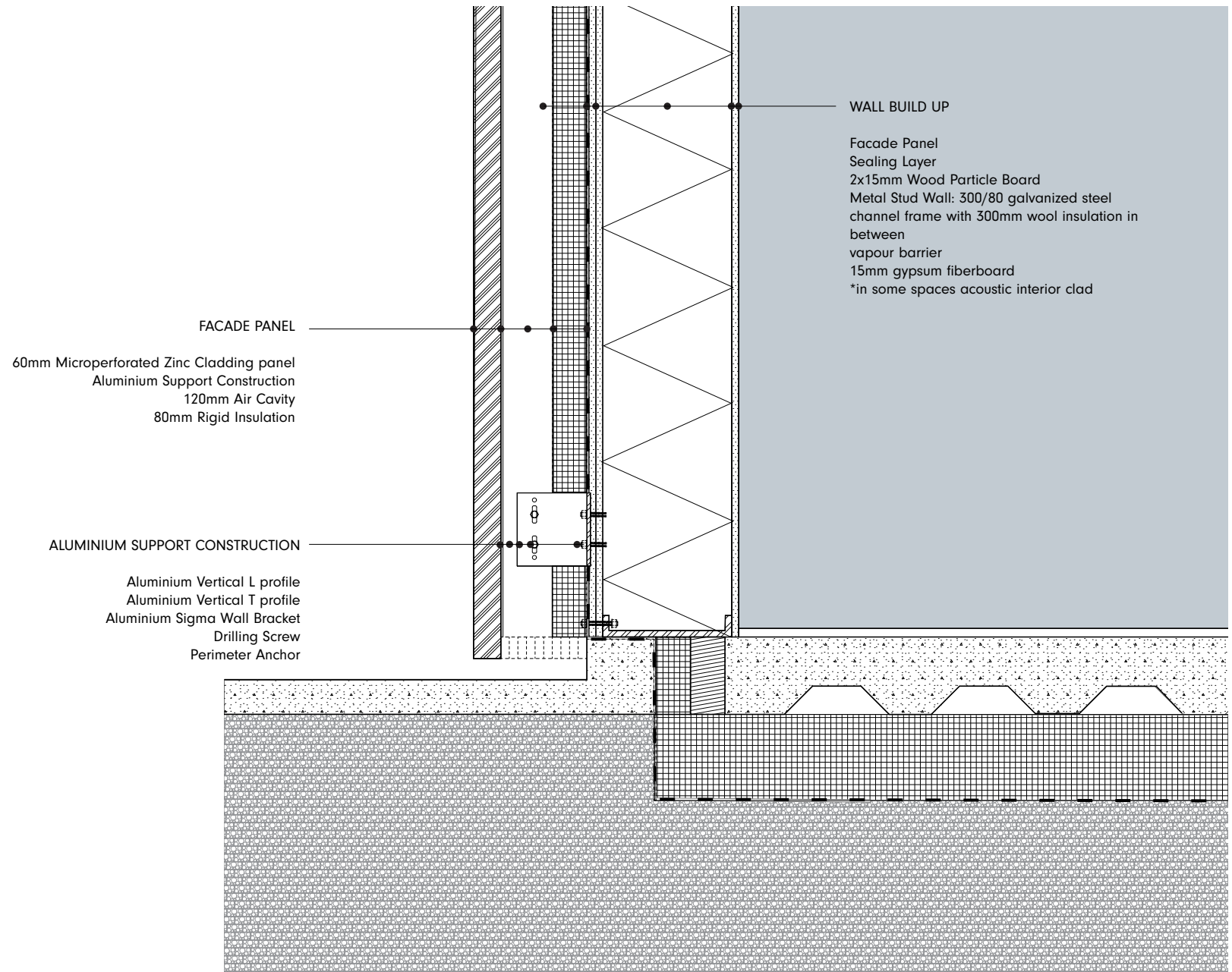
FINAL DESIGN: OPEN AREA ENCLOSURE DETAIL



FINAL DESIGN: ROOFTOP DETAIL

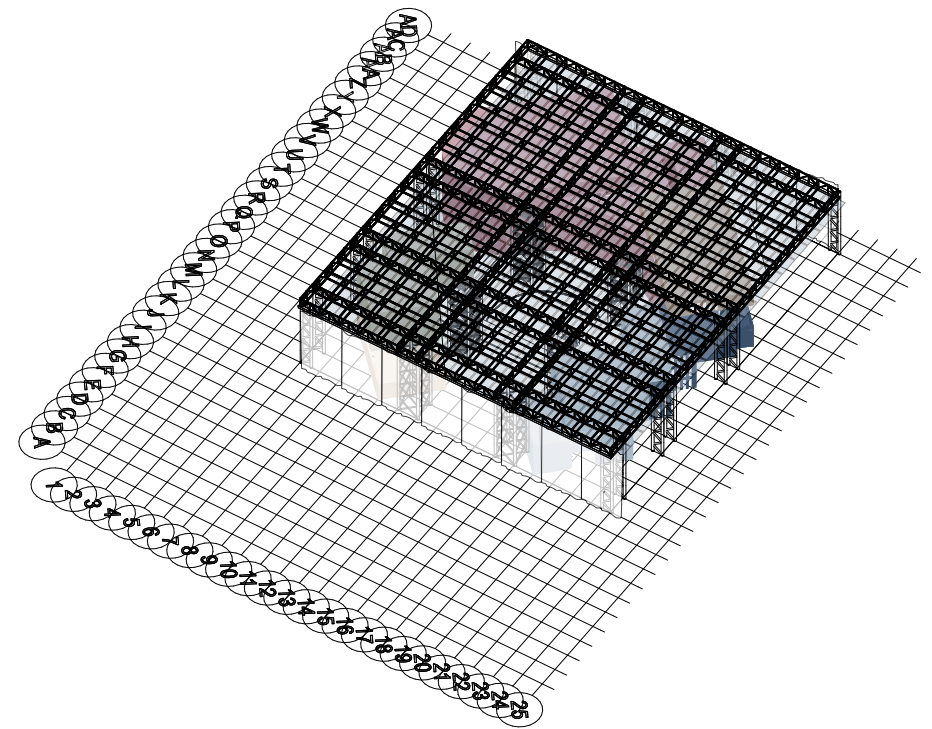
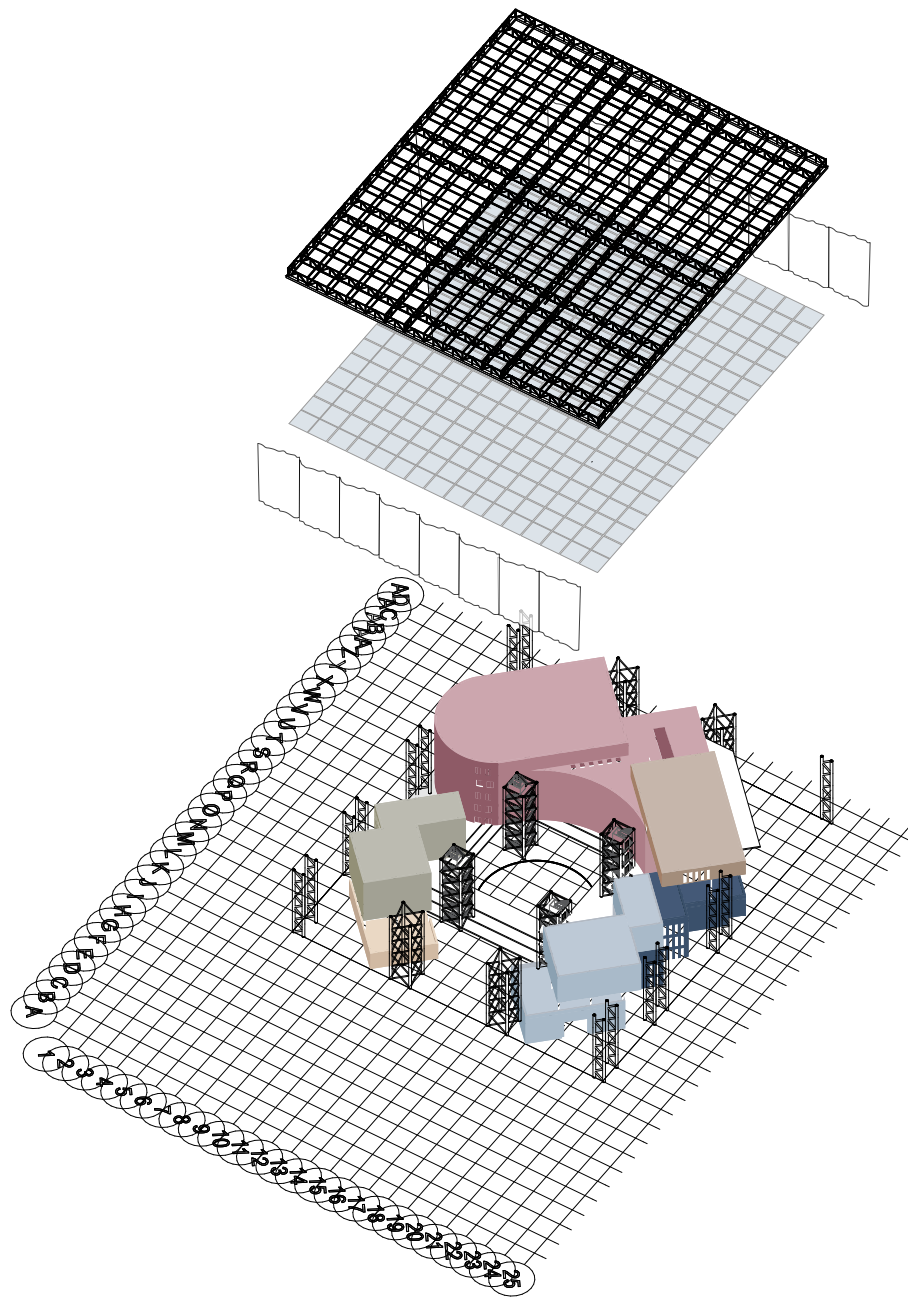


FINAL DESIGN: WALL BUILD UP DETAIL



LET'S PLAY OPERA
DETAIL 3
1:5

FINAL DESIGN: STRUCTURE



CONCLUSION

This project set out to answer the research question: *‘‘How can the architectural design of an opera house enable cultural empowerment within an information age society?’’ The objective of the project was therefore not only to design an opera house, but to investigate how architecture can support more empowering relationships between cultural institutions and their users.

Within the theoretical framework, Cedric Price's Fun Palace was examined as a reference point for cultural empowerment. The project did not seek to replicate the Fun Palace itself, but rather to translate its underlying values into the context of a contemporary opera house. These values included flexibility, permeability, informality, and opportunities for learning through participation. Together, they provided a framework through which the design could challenge conventional perceptions of the opera house while maintaining its cultural significance.

The final design demonstrates flexibility through its structural system, which allows the building to adapt to future changes in programme and use. Rather than prescribing a fixed way of occupying the building, the structure supports a variety of configurations and activities over time. This flexibility acknowledges that cultural institutions must evolve alongside changing societal expectations.

Permeability is expressed through the curtain façade and the openness of the building towards the city. By exposing activities, circulation, and production processes to the public realm, the building reduces the separation between institution and citizen. The opera house becomes visible and understandable to

passers-by, inviting curiosity and engagement.

Informality is achieved through the introduction of the open stage and publicly accessible performance spaces. These spaces allow for spontaneous events, rehearsals, and encounters between different user groups. By exposing elements traditionally hidden backstage, the design breaks down conventional hierarchies between performers, staff, and audiences. Participation becomes a possibility rather than a privilege.

Finally, the project addresses ludic learning by creating a variety of spaces and activities that encourage exploration. Visitors can move through the building, encounter rehearsals, workshops, performances, and informal gatherings without following a predetermined route. Through discovery and observation, users gain insight into the performing arts and become active participants in the cultural environment.

Therefore, the project concludes that architectural design can contribute to cultural empowerment by transforming the opera house from a singular venue of consumption into a permeable, flexible, and participatory cultural platform embedded within the everyday life of Milan.

IMPLICATIONS AND RECOMMENDATION

This graduation project explored how the opera house typology could be reimagined for information age society. While the project focuses on a specific building and site, its implications extend beyond the design of a single opera house. At its core, the project raises questions about the relationship between cultural institutions, architecture, and changing societal values.

One of the main implications of the project is the idea that architecture can influence not only how people move through buildings but also how they perceive and interact with different activities. By increasing permeability, creating opportunities for participation, and blurring the boundaries between performance spaces and public spaces, the project proposes a shift away from the traditional model of cultural consumption. This approach may be relevant not only for opera houses but also for other cultural institutions that face similar challenges in attracting diverse audiences or surviving within the digital age.

The project also highlights the importance of understanding architecture as part of a broader network of social, cultural, and economic factors. Throughout the research process, it became evident that the future of cultural institutions cannot be addressed through architectural design alone. Questions of programming, management, accessibility, and public engagement are equally important. As a result, one implication of this project is that successful cultural buildings require a more interdisciplinary approach, where architectural design is developed alongside cultural, social, and operational strategies.

Reflecting on the project, several recommendations can be made for future

development. Firstly, a deeper investigation into user experience and audience behaviour would strengthen the proposal. While the project is based on theoretical research, precedent studies, and client analysis, direct engagement with potential users through interviews, workshops, or participatory design methods could provide valuable insights into how different groups perceive and use cultural spaces.

Secondly, further development of the operational and economic aspects of the proposal would be beneficial. Many of the ideas explored within the project rely on increased public engagement and new forms of cultural participation. Understanding how these activities could be managed, funded, and integrated into the institution's daily operations would provide a stronger foundation for implementation.

Overall, through the project, although taken to extreme it was demonstrated that architecture has the potential to support cultural transformation by creating spaces that respond to evolving societal expectations. While many questions remain open, the project provides a basis for further exploration of how cultural institutions can become more inclusive, participatory, and connected to people.

REFLECTION

The graduation studio 'Bodies and Buildings' provided a unique framework for exploring the reciprocal relationship between architecture and human behaviour. The studio's focus on how buildings shape bodies and how bodies, in turn, shape buildings strongly influenced my graduation project. By choosing to redesign the opera house typology, I was able to investigate a building type where this relationship is particularly visible. Opera houses are highly complex environments that coordinate performers, musicians, technicians, and audiences through carefully designed spatial systems. At the same time, they carry strong cultural and social meanings. Working within the context of Milan and the historic Teatro alla Scala allowed me to explore these relationships in a real and culturally significant setting.

One of the most rewarding aspects of the graduation project was the design process itself. I was genuinely interested in the topic and found the project exciting from the beginning. However, because I chose a relatively unconventional direction and set an ambition of complete reimagination of the program and the way its used, the process was also challenging. My intention was not only to design an opera house but to question the traditional role of opera within the society and explore how architecture could make it more accessible and engaging for wider audiences. Translating these ideas into a functional building proved much more difficult than I initially expected.

Throughout the year, I went through numerous iterations, continuously testing and refining both the concept and the design. While this iterative process was sometimes frustrating, it ultimately strengthened the project by forcing me to critically evaluate my assumptions and make more informed design decisions. Towards the very end of the project I believe I have finally achieved the design I had set out for myself

The research component of the project was equally valuable. I particularly appreciated the studio's emphasis on exploring the project through multiple lenses, namely the site, the client, and the program. Together with the theoretical framework and research question, these investigations provided a strong foundation for the design process. Each lens revealed different opportunities and challenges, helping me develop a more comprehensive understanding of the project. At the same time, conducting all of these research streams simultaneously was sometimes overwhelming. The amount of information I gathered became difficult to organise, and there were periods when I felt lost within the complexity of the project. Looking back, I believe this experience taught me the importance of developing a clear research structure and maintaining a stronger overview throughout the design process.

A particularly valuable aspect of this graduation project was working with a client perspective in mind. This was the first project during my studies where the client played a significant role in shaping the design. I found this extremely insightful because it introduced a layer of realism that is often absent in academic projects. Considering the client's ambitions, needs, and identity helped guide design decisions and provided a clearer sense of purpose. It also highlighted the balance that architects must achieve between conceptual ambitions and practical requirements. This experience gave me a better understanding of how architectural projects operate in professional practice and reinforced the importance of designing not only for ideas, but also for people and institutions.

Overall, the graduation studio challenged me both intellectually and creatively. It pushed me to engage with complex social, cultural, and architectural questions while developing a fun project that reflects my personal interests and ambitions as a designer.

BIBLIOGRAPHY

ArchEyes. (n.d.). Snøhetta's opera house in Oslo: Transparency and inclusivity.
<https://archeyes.com/snohettas-opera-house-in-oslo-transparency-and-inclusivity/>

Blackwell Publishing. (n.d.). Opera and popular culture [Sample chapter].
https://www.blackwellpublishing.com/content/bpl_images/content_store/sample_chapter/0631222103/001.pdf

Bourdieu, P. (1984). Distinction: A social critique of the judgement of taste (R. Nice, Trans.). Harvard University Press.

Botta, M. (n.d.). Spazi della cultura.
<https://www.botta.ch/it/SPAZI%20DELLA%20CULTURA?id=5>

Diller Scofidio + Renfro. (n.d.). The Shed.
<https://dsrny.com/project/the-shed>

Fondazione Teatro alla Scala. (n.d.). Mission and institutional objectives. <https://www.teatroallascala.org>

Fondazione Teatro alla Scala. (n.d.). Milano per la Scala Foundation.
<https://www.teatroallascala.org/en/the-theater/close-to-la-scala/milano-per-la-scala-foundation.html>

Laidlaw, J. (2024). Opera and audiences: Public attitudes, participation, and relevance (Research report). Public First.
https://www.publicfirst.co.uk/wp-content/uploads/2024/10/Laidlaw_Opera_Research_Report.pdf

Littlewood, J., & Price, C. (1968). The Fun Palace. Architectural Design, 38(3), 127–131.

Mathews, S. (2007). From agit-prop to free space: The architecture of Cedric Price. Black Dog Publishing.

Rogers, R., & Piano, R. (1977). Centre Pompidou. Architectural Monographs. Academy Editions.

Re-thinking The Future. (n.d.). Casa da Música, Porto by Rem Koolhaas: The asymmetrical polyhedron.
<https://www.re-thinkingthefuture.com/case-studies/a3154-casa-da-musica-porto-by-rem-koolhaas-the-asymmetrical-polyhedron/>



