

RE-AWAKE THE SERRA-MONTE CENERI OVERPASS THROUGH DOUBLE-LAYERED LANDSCAPE



POLITECNICO
MILANO 1863

Supervisors: Longo Antonio Emilio Alvise, Motti Matteo

Authors: Wang Han, Zhang Yi

Location: Milan, Lombardia, Italy

ABSTRACT: This project reimagines the Serra–Monte Ceneri overpass in Milan as a double-layered urban landscape. Originally designed for traffic, the structure now acts as a barrier, fragmenting neighborhoods and interrupting ecological and cycling continuity. The proposal removes vehicles from the bridge deck and redistributes traffic to surrounding streets, transforming the upper level into a linear public park. The underpass is redesigned as a flexible public space with gardens, sports areas, and community functions. A new east–west cycling spine and continuous pedestrian route reconnect fragmented green spaces and urban districts. By operating across two spatial layers, the project shifts the overpass from single-purpose infrastructure to an integrated landscape that promotes connectivity, ecology, and shared public life.

CONTENTS

Chapter 1	About Leftover Space
Chapter 2	Leftover Space In Milan
Chapter 3	The Serra – Monte Ceneri Overpass
Chapter 4	Site Photo
Chapter 5	Site Analysis
Chapter 6	Concept
Chapter 7	Masterplan
Chapter 8	Design Details Display
Chapter 9	Reference & Case Study

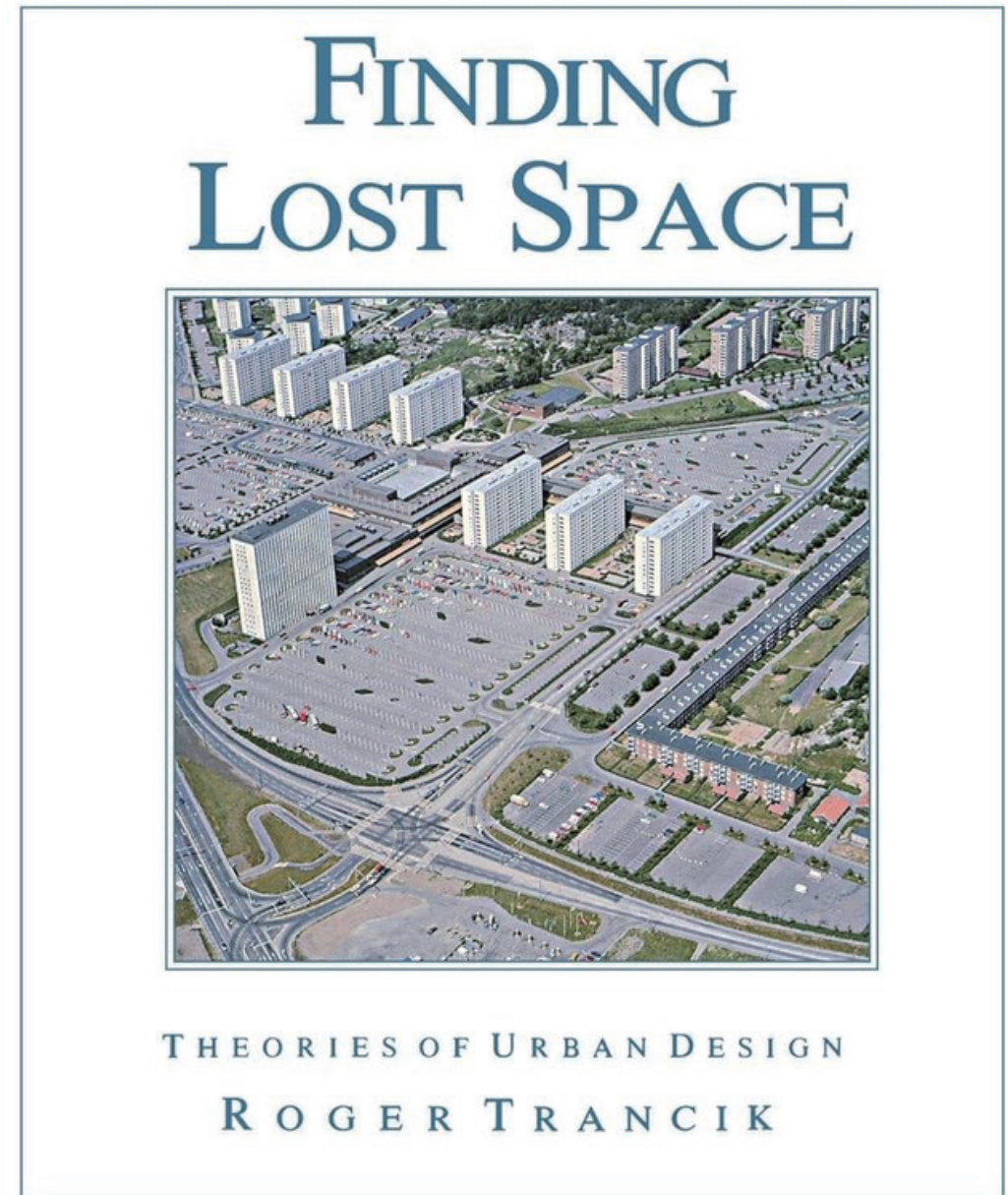
CHAPTER 1

ABOUT LEFTOVER SPACE



WHAT IS LEFTOVER SPACE?

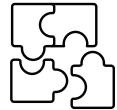
Since 1986, many scholars have begun to investigate the concept of leftover spaces and provided many definitions and suggested several interpretations, such as loosespace, cracks, vacant, in-between, transitional, liminal, neglected spaces, deteriorated and indeterminate space. Roger Trancik (1986) first used the term of lost space to describe leftover spaces because they are in need of re-design, antispace, making no positive contribution to the surroundings or users. According to Trancik, lost space is a leftover unconstructed landscape or undermanaged space. They are ill-defined, without measurable boundaries, and fail to connect elements coherently.



WHY ARE THERE LEFTOVER SPACE IN CITIES?



According to Trancik, there are four major factors contributing to leftover space



Modern movement in architecture – The functionalist planning ideals of modernism often separated buildings from streets and public life, emphasizing isolated objects in open space rather than cohesive urban fabric.

Dominance of the automobile – Roads, parking lots, and highway infrastructure consume vast amounts of land, fragmenting urban areas and leaving behind underused or inaccessible residual spaces.

Urban renewal and zoning policies – Large-scale clearance and rigid zoning rules disrupted traditional mixed-use patterns, producing vacant or ill-defined parcels that lack clear purpose or ownership.



Changes in land use and economic conditions – Shifts in industry, commerce, and population over time leave behind obsolete or neglected areas, particularly in post-industrial cities.



WHY ARE THEY IMPORTANT?

1. Location: near planned developments, under highways, railways, or in unnoticed urban pockets.
2. Ownership: Often publicly owned, unclaimed, or reserved for future development or greening.
3. Neglect: Frequently overlooked in planning, architecture, and urban theory, leading to underutilization or abandonment.
4. Misuse: Without clear purpose, these spaces become dumping grounds or informal shortcuts.
5. Variety: They differ widely in size and shape, making standardized planning difficult.
6. Risk: Lack of strategic action can make them unsafe or hazardous.
7. Potential: Urban planner Sola-Morales (1995) viewed them as evocative zones offering freedom and expectation through their unused nature.

CRITERIA FOR CATEGORISING LEFTOVER SPACE

1. Trancik's typology - based on spatial form and location

In his book, Trancik (1986) categorised "lost spaces" based on their openness and enclosure within the city's structure:

Entry foyers: Transitional spaces that serve as entrances to a larger urban area.

Inner-block voids: Spaces located within the interior of city blocks.

Networks of streets and squares: A system of interconnected streets and public spaces that have become dysfunctional or disconnected.

Parks and gardens: Public green spaces that are either underutilised or poorly designed.

Linear open space system: Networks of open areas, such as former railway lines, that could be transformed into recreational paths or community resources.

2. Németh & Langhors - based on current use or potential use

Researchers like Németh & Langhorst (2014) describe leftover spaces according to their social or ecological functions:

Informal-use spaces: temporarily occupied by skateboarders, community gardens, or street vendors.

Ecological refuges: self-seeded vegetation zones that act as spontaneous green infrastructure.

Transit or access spaces: underpasses, roundabouts, and other "non-places" of mobility.

Security or exclusion zones: fenced, infrastructural, or maintenance areas where public access is restricted.

CRITERIA FOR CATEGORISING LEFTOVER SPACE

3. Ignasi de Solà-Morales - based on perception and cultural meaning

Ignasi de Solà-Morales (1995) introduced the poetic term *terrain vague*, describing leftover spaces as “empty but full of potential.”

Later interpretations include:

Ambiguous spaces: visually open but socially undefined.

Transgressive spaces: where urban rules break down (graffiti zones, informal gathering spots).

Memory spaces: retaining traces of former uses or urban layers.

TYPE OF LEFTOVER SPACE

Types & Distribution

Elevated/ramps corridors; railway corridors and former yard edges; post-industrial/logistics fringe lands; river/canal maintenance strips; pockets around large facilities. Densest along the north–northeast industrial–transport belt.

Formation Mechanisms

Infrastructure severance (elevation/setbacks/clearances) + deindustrialization–redevelopment mismatch + multi-party ownership and safety regulations → long-term “temporary, low-use” status.

Key Problems

Ecology: Impervious surfaces → heat islands and waterlogging; habitats and waterways are linearly severed.

Social: Poor lighting/visual obstructions; unfriendly for women and at night; stigmatization, illegal parking and dumping are common.

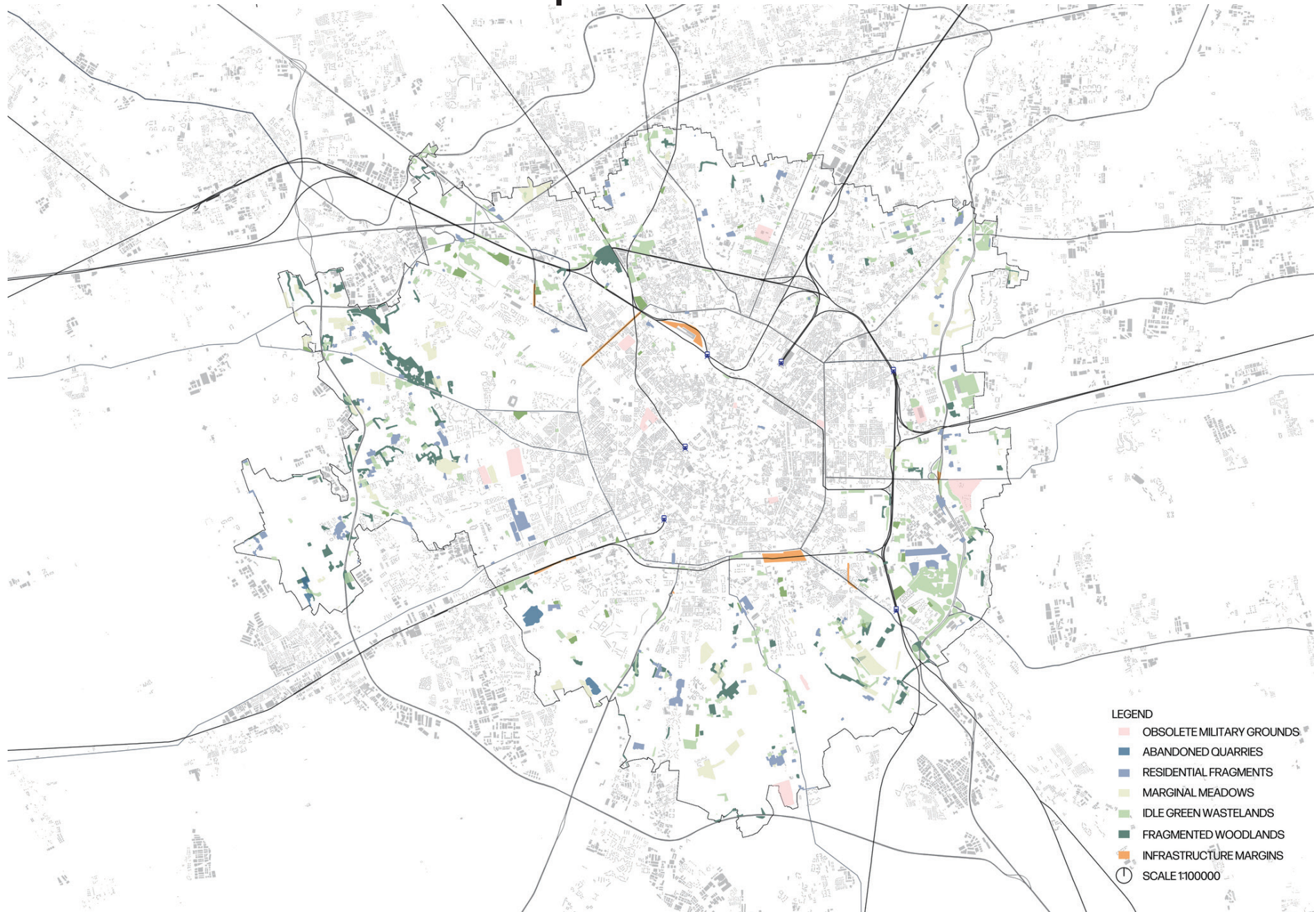
Mobility: Breaks in walking/cycling and the “last mile”; spaces are passed through, not stayed in.

CHAPTER 2

LEFTOVER SPACE IN MILAN



The Distribution Of The Leftover Space In Milan



PALIMPSEST

André Corboz's metaphor

The current infrastructure in big cities is often the consequence of 20th-century programming and design, heavily based on the use of the automobile and frequently the result of a historical period characterised by strong economic and demographic growth. What is provided by this kind of network is therefore obsolete and should be reviewed.

"Territory as Palimpsest" packs an even greater punch if we adhere to the demand to enhance and rethink some of the signs and legacies of the past.

Likewise, recycling infrastructures facilitate the flexibility and adaptability of existing resources in order to deal with the changing needs of society and the environment. In other words, some functions and values of urban infrastructure can be preserved, transformed or integrated into new contexts.

In the city of Milan, parks and gardens account for 48% of public space, 2% are squares, while the remaining 50% is occupied by the road network. Densely populated cities like Milan can adapt this situation to contemporary needs, obtaining not only environmental benefits - such as improving air quality, promoting biodiversity, and encouraging a more active lifestyle - but also social benefits that foster socialisation, safety, and community cohesion.



WHY OVERPASS?

Milan has many urban infrastructural leftovers. The space underneath the overpass represents a typical form of them. It embodies both the way that modern transportation breaks up space and the energy that could be used to bring cities back together



CHAPTER 3

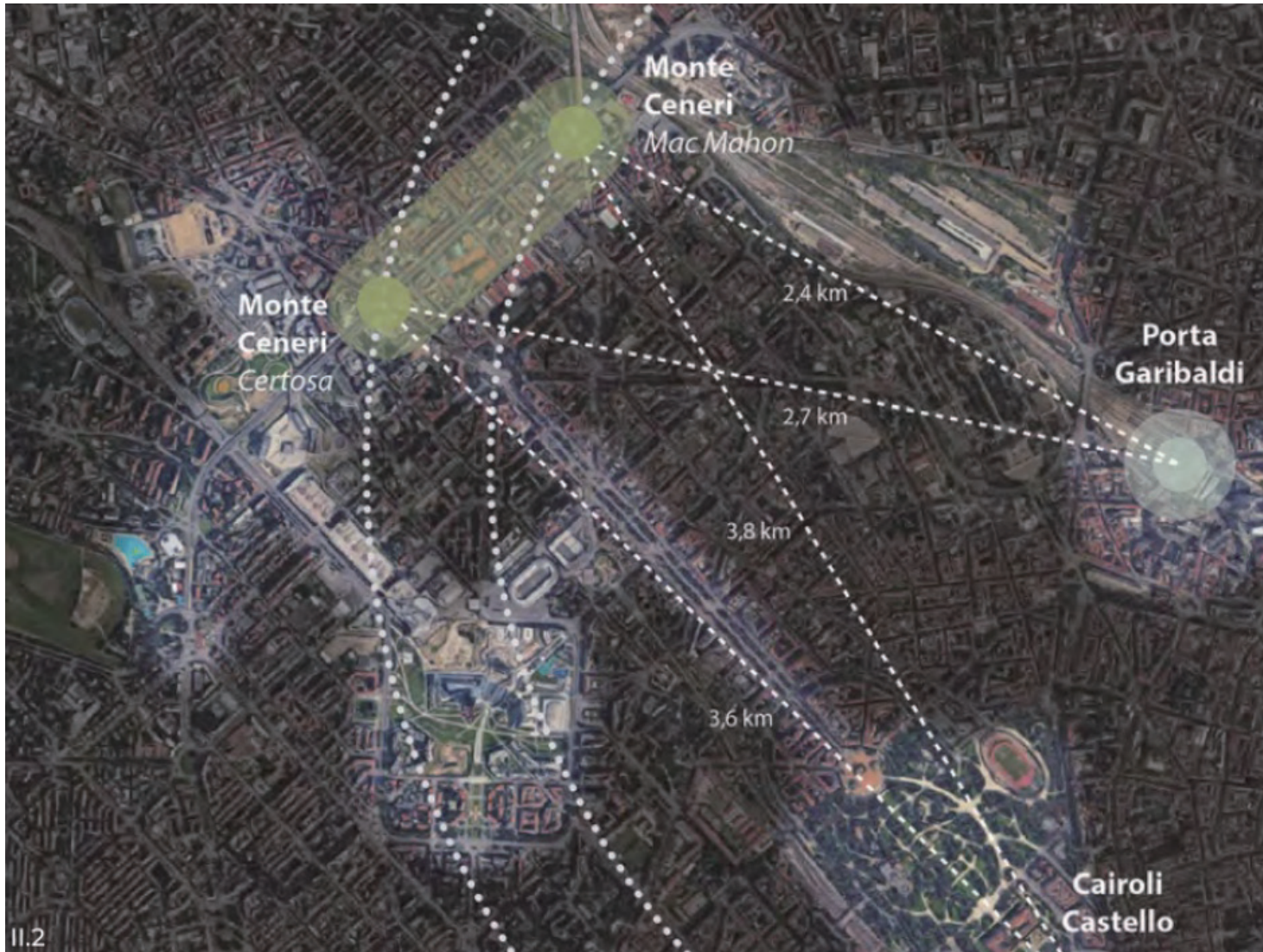
THE SERRA – MONTE CENERI OVERPASS



INTRODUCTION

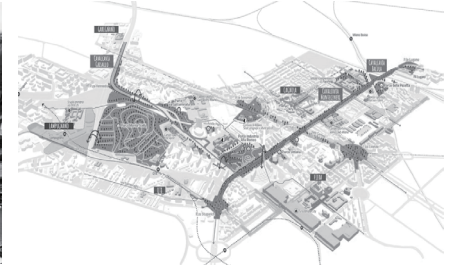
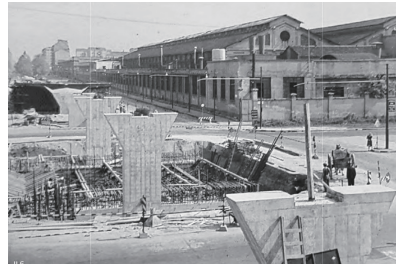
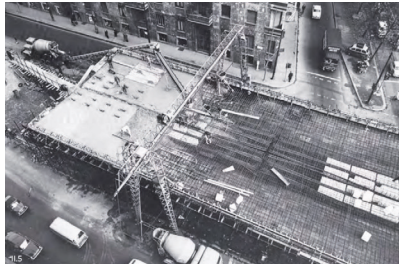
The proposed site is approximately 1 km long and 19,000 sqm. It is located in the north-west part of the city and can be accessed via three tram lines and one bus line, which makes it well-connected to the city centre. It is part of the regeneration process that began in the previous decade and features significant functional reconversions that create a new urban polarity.

The Municipality of Milan has announced that it will launch a call for proposals for the design of Monte Ceneri in 2025 (bando di progettazione di fattibilità), aiming to transform the overpass from a vehicular-dominated infrastructure into a linear public space (boulevard), enhancing both the upper and lower sections with services, commercial, social, and cultural spaces.



Distances between the Serra -Monte Ceneri Overpass and the urban spots of the area it crosses,2020

HISTORY AND PRESENCE



1957–1965 Design & Construction

Project: Piano Regolatore Generale di Milano (1953)

Built by Silvano Zorzi and Giorgio Macchi, the overpass marked a milestone in post-war Italian engineering, its thin ribbon form expressing modern mobility.

1965–1986 Industrial Expansion

Project: Alfa Romeo Portello Industrial System

It served the Alfa Romeo Portello plant and nearby industries, boosting traffic flow while dividing the dense residential fabric below.

1986–2001 Deindustrialization

Event: Dismissione dell'Alfa Romeo Portello (1990s)

A pioneering post-war structure, the overpass embodied urban progress through its slender ribbon design.

2001–2015 Urban Redevelopment

Project: Portello Urban Redevelopment Program & Polo Urbano Portello

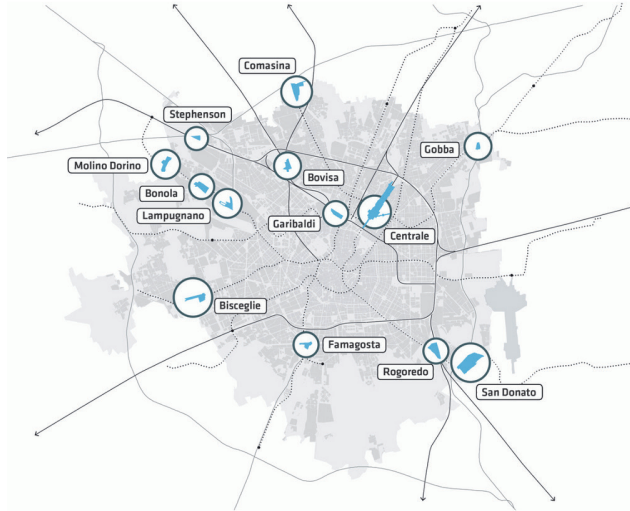
Industrial land was transformed into commercial, residential, and exhibition areas.

2015–Present Reactivation

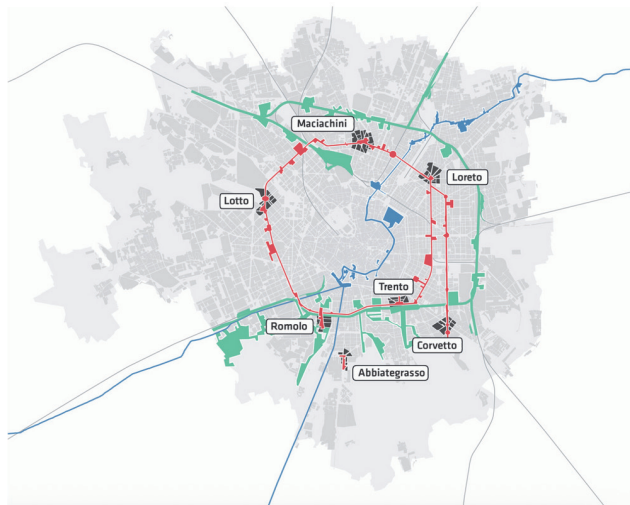
Project: Accordo di Programma Scali Ferroviari di Milano (2017)

Once a symbol of modernization, the viaduct later revealed the spatial costs of infrastructure-led urban growth.

P.G.T. MILANO 2030

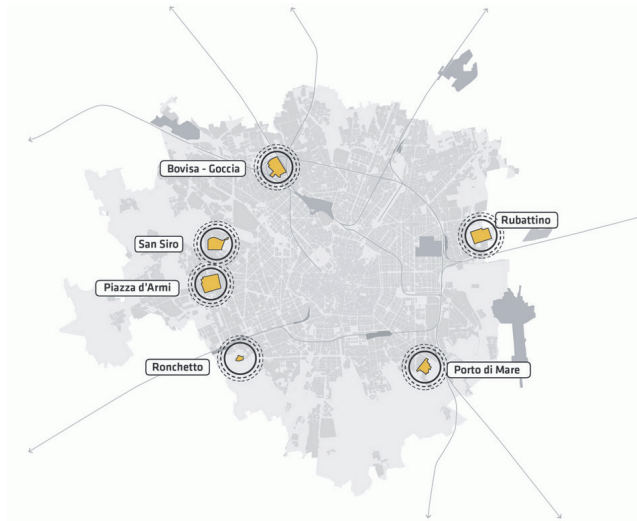


12 transit hubs - which currently attract millions of people daily - are expected to become a major metropolitan spots. The Plan provides flexible rules to establish conditions of urbanity by increasing the functional mix, redeveloping public space, overcoming infrastructure barriers, and improving relations with the surrounding urban areas.

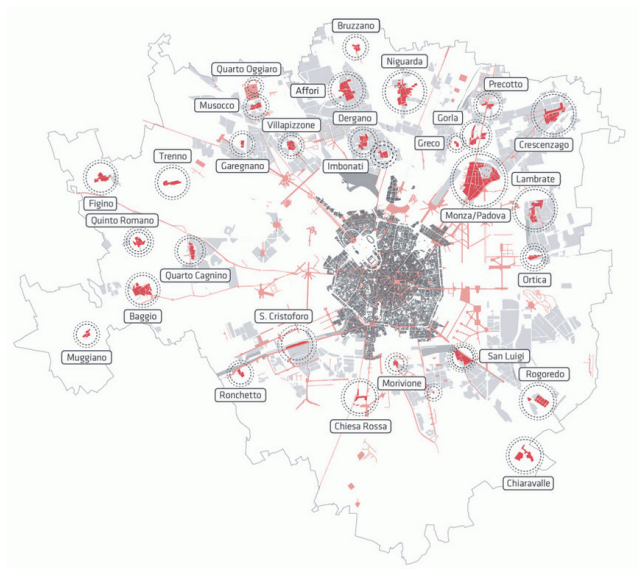


7 strategic squares - Loreto, Maciachini, Lotto, Romolo, Abbiategrosso, Trento, and Corvetto are now traffic hubs, passages between the centre and the suburbs. These spaces require a profound transformation. The possibility of densifying the building curtain allows for the creation of central spaces where public transport infrastructure and vehicular mobility coexist with spaces for pedestrians, new functions facing the public space, green areas and new relationships with the surrounding urban areas.

P.G.T. MILANO 2030



6 major functions in urban voids - Some places have characteristics of accessibility, location, and conformation that are compatible with the accommodation of functions of a strategic nature, for public use and/or of public or general interest, including private ones. The Bovisa-Goccia, Porto di Mare, Ronchetto sul Naviglio, Piazza d'Armi, San Siro, and Rubattino areas allow for the growth of functions of excellence and, in general, the attractiveness of the city on a global scale.



88 neighbourhoods - The historic centres and pedestrian areas identify, within different contexts, complex systems of public spaces, urban fabric, and building facades that are currently not adequately integrated and enhanced. The Plan identifies the need to create a framework for collective urban life based on the identity of the neighbourhoods, facilitating the establishment of small businesses and private services, prioritising pedestrian mobility, and bicycle paths.

CHAPTER 4

SITE PHOTO



OVERPASS



OVERPASS-DOWN

Parking



SURROUNDING NEIGHBORHOOD

Park



Commerce



Traffic Network



SURROUNDING NEIGHBORHOOD

Community



Church

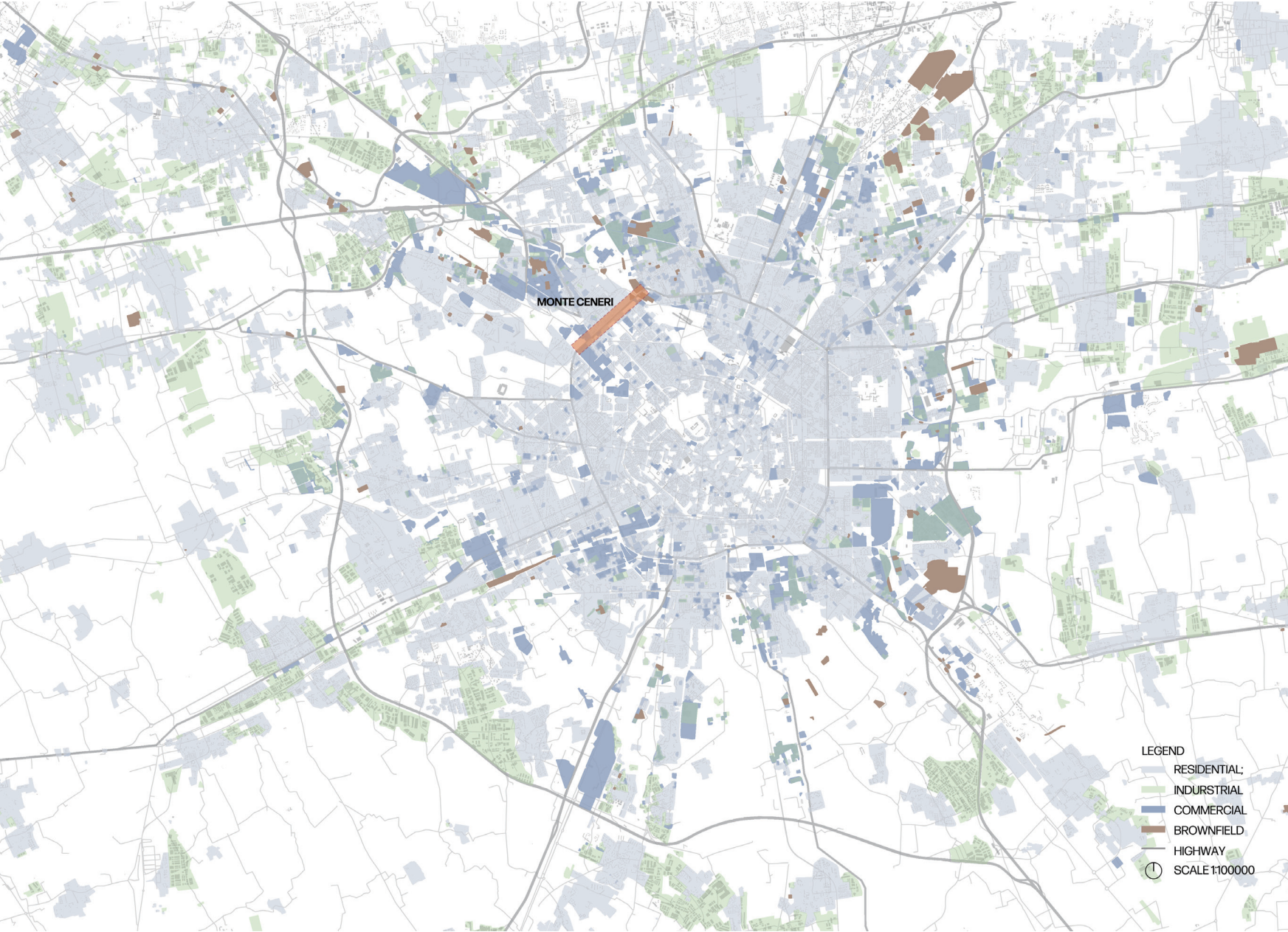


CHAPTER 5

SITE ANALYSIS

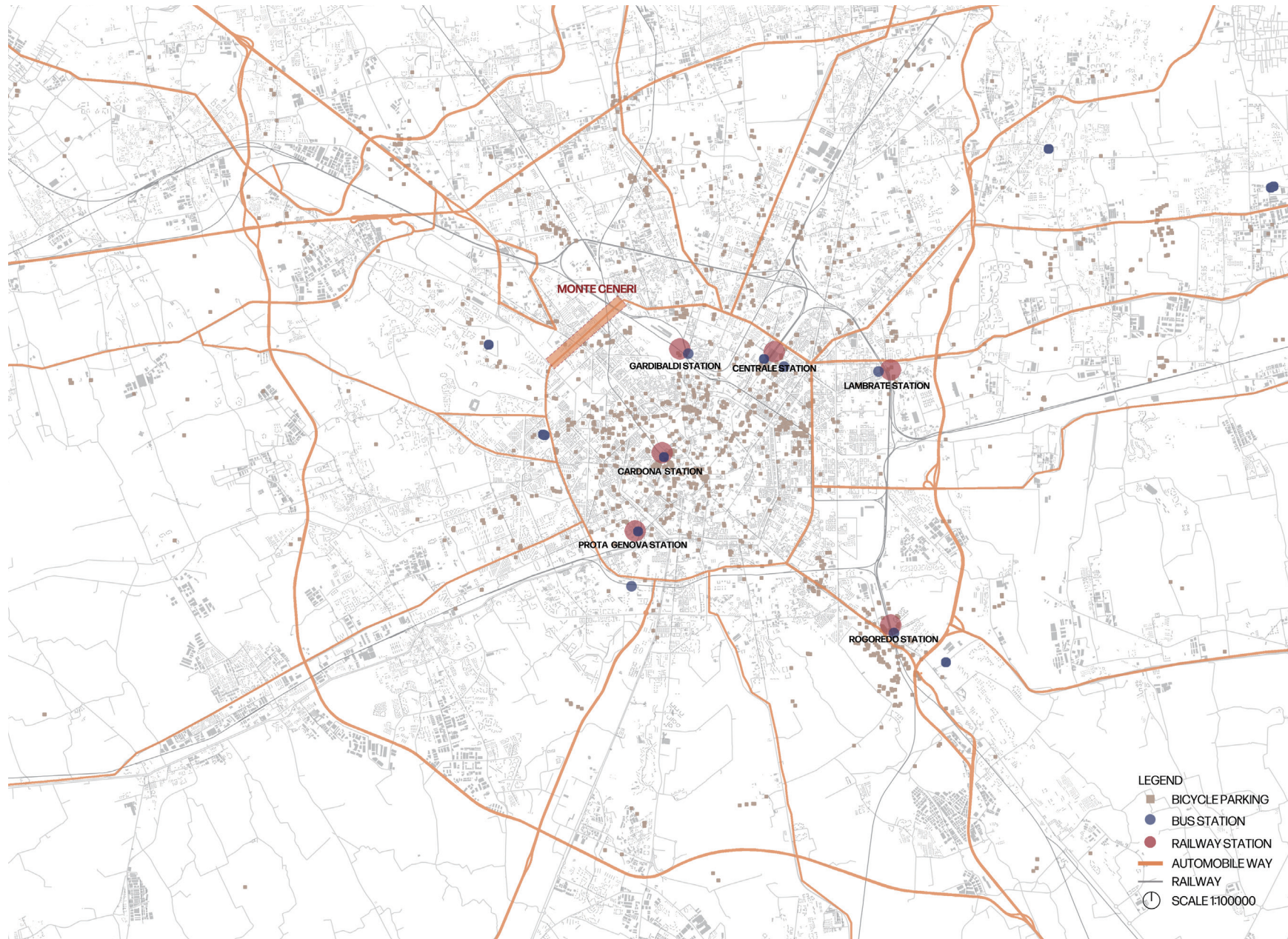


CITY SCALE - LANDUSE



Situated in the north-western part of Milan, in Municipio 8, the overpass is located in a complex area characterised by the presence of very different portions of land (commercial areas, residential blocks, industrial relics).

CITY SCALE - TRANSPORTATION



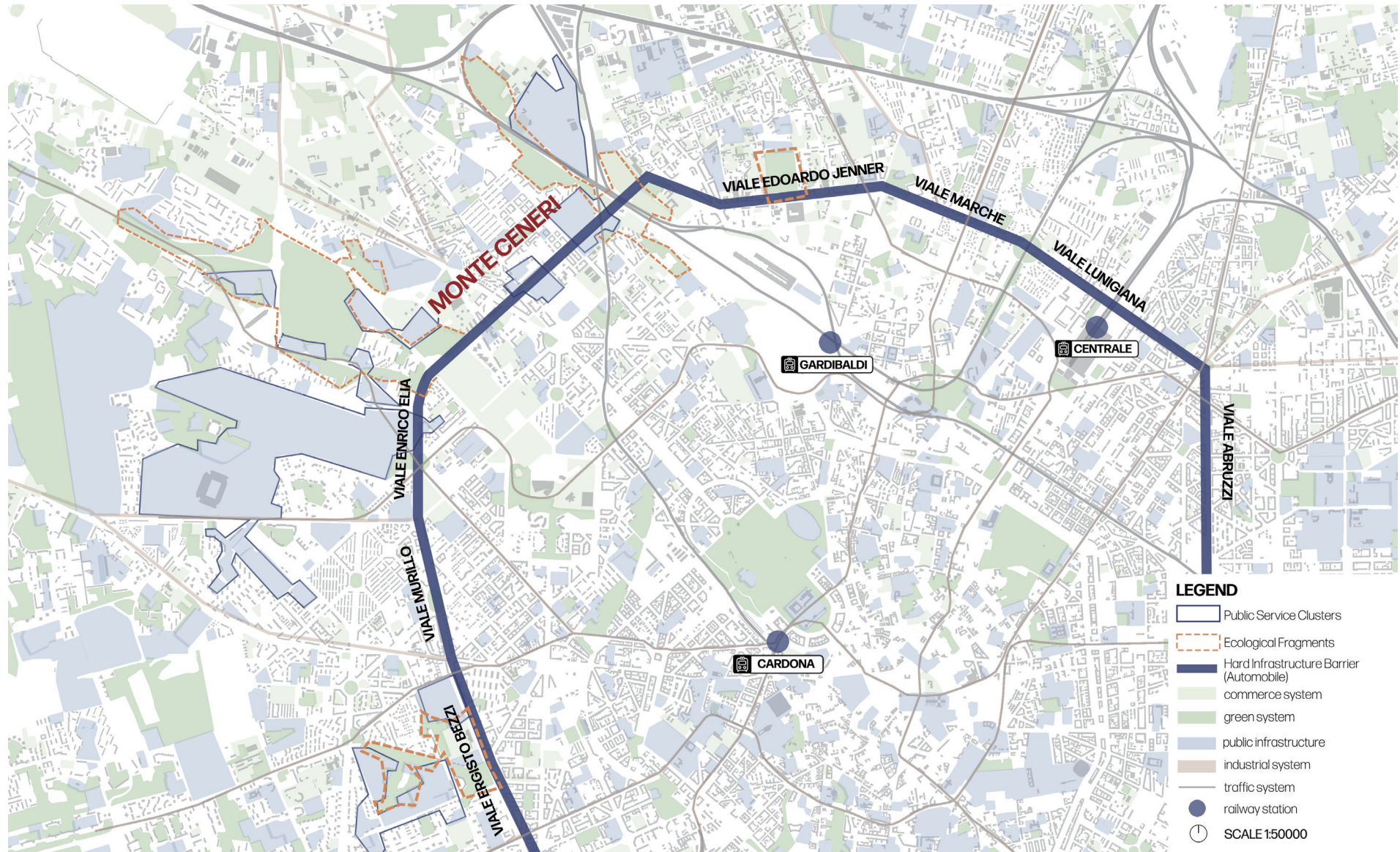
Focus on transportation, the Serra-Monte Ceneri overpass lies right on a major infrastructural ring of Milan, close to the railway system. It is a space highly accessible to vehicles and solely dedicated to vehicles. It lacks slow-mobility nodes like bicycle parkings.

CITY SCALE - GREEN SPACE



The Monte Ceneri site is currently an ecological void — but it's geographically strategic: Close to large-scale ecological parks and green land; Structurally continuous along a major linear infrastructure (which could become a green corridor spine); Lacking permeability and vegetation continuity.

A SYSTEM OF URBAN CONNECTOR



This analysis identifies and integrates urban elements severed by the elevated infrastructure (Monte Ceneri). By deconstructing the macro-fabric, we define two critical systems: the Ecological Fragment Network (orange dash) and Public Service Clusters (blue dash). The existing viaduct (solid blue) currently acts as a physical barrier, causing a rupture in the city's functional sequence.

Analysis Of City Scale- Distribution Of Residences

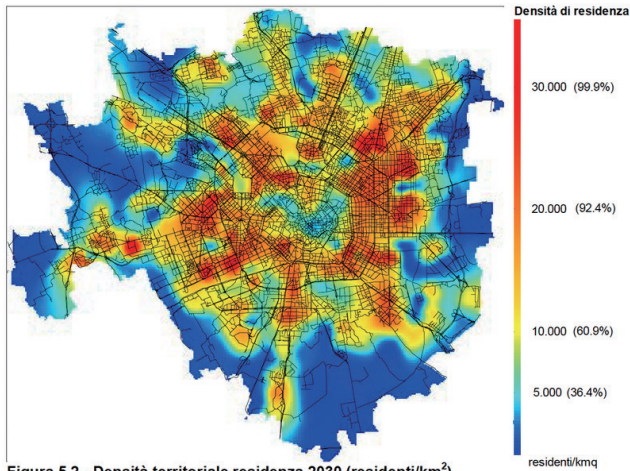


Figura 5.2 - Densità territoriale residenza 2030 (residenti/km²)

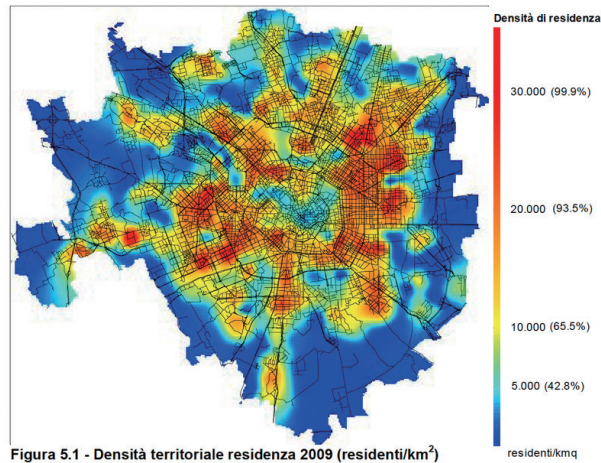


Figura 5.1 - Densità territoriale residenza 2009 (residenti/km²)

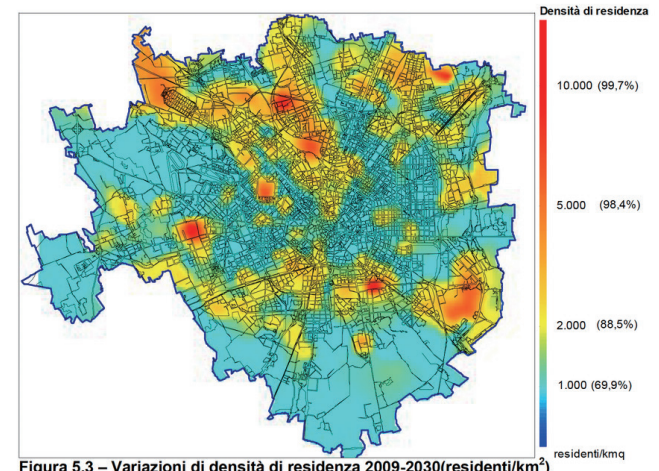


Figura 5.3 - Variazioni di densità di residenza 2009-2030(residenti/km²)

Changes in residential density 2009-2030

Analysis Of City Scale- Distribution Of Mobility Demand

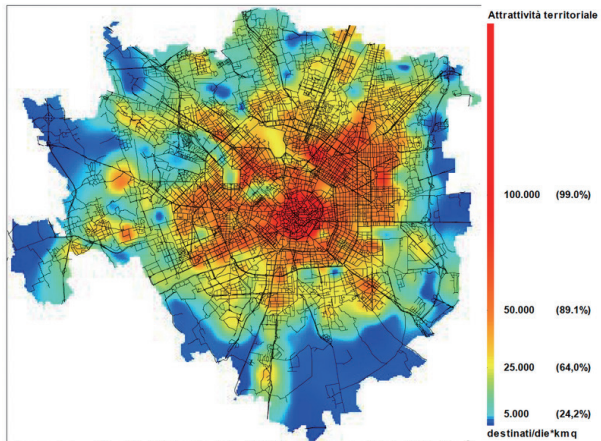


Figura 5.4 - Attrattività territoriale 2009 (spostamenti totali/die*km²)

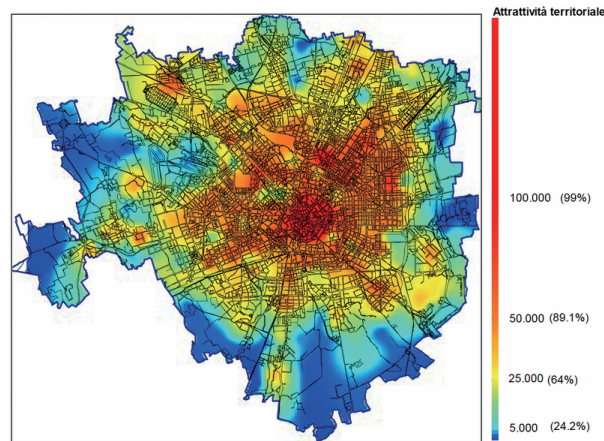


Figura 5.5 - Attrattività territoriale 2030 (spostamenti totali/die*km²)

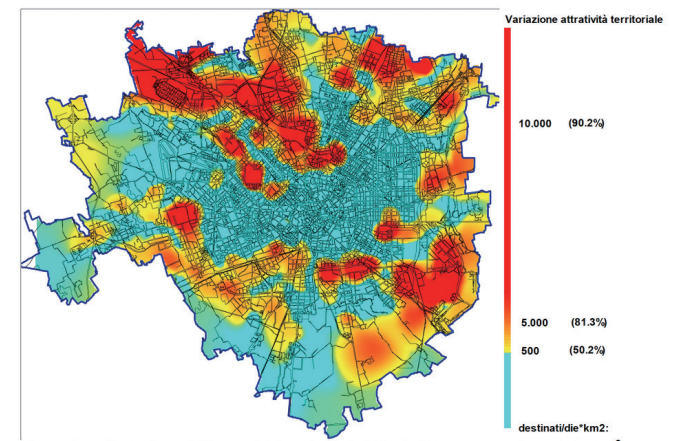
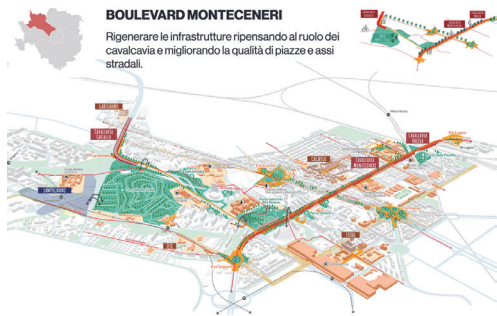


Figura 5.6 - Variazione dell'attrattività territoriale 2009-2030(spostamenti totali/die*km²)

Change in regional attractiveness 2009-2030

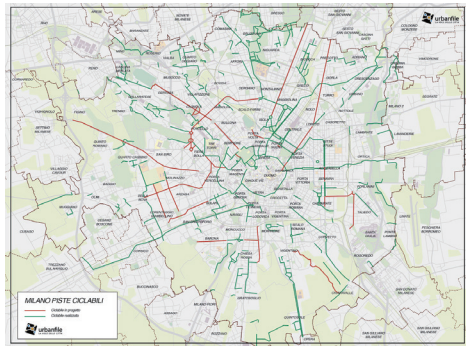
EXISTING PROJECT

I. Municipal Policy: High Line-Style Vision



The vision is for a city composed of neighborhoods capable of offering not only housing but also all essential services, with particular attention to quality mobility, green spaces, and the improvement of public spaces, in accordance with the principles of the Land Use Plan and the Neighbourhood Atlas.

II. Cambio – Piano Urbano della Mobilità Sostenibile (PUMS)



“Cambio” is the big plan under the P.U.M.S. that aims to build about 750 km of continuous cycle routes linking Milan and its metropolitan area by 2035.

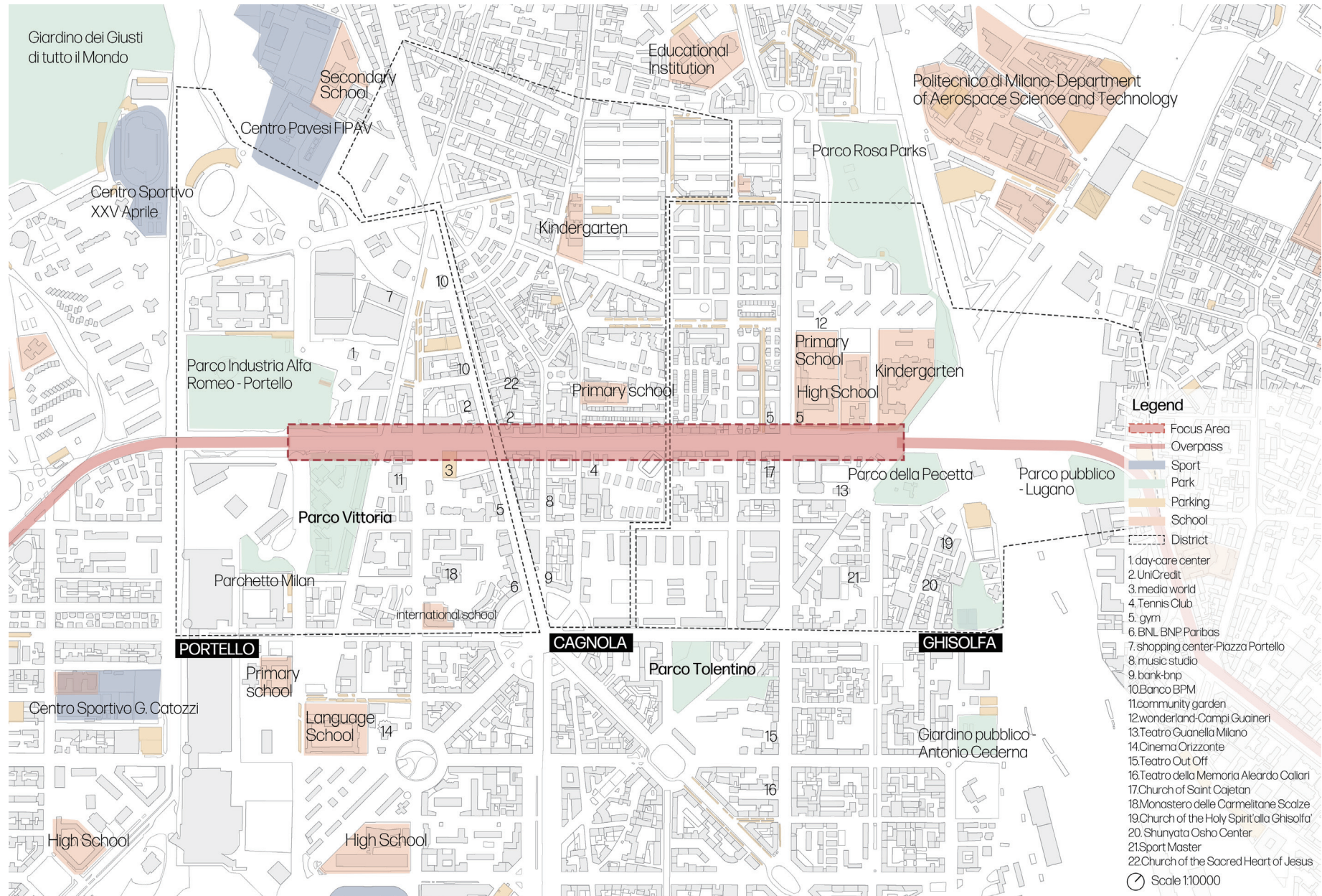
The goal: 80% of key destinations (schools, hospitals, metro stations, jobs, etc.) should be within 1 km of a main cycling route. It focuses on connecting existing fragments (Navigli, Martesana Canal, outer suburbs) and integrating bikes with public transport nodes. The idea isn't just to paint more bike lanes, but to design a hierarchical system—kind of like roads: highways vs. local streets, but for bikes.

III. Milano Green Circle 90/91



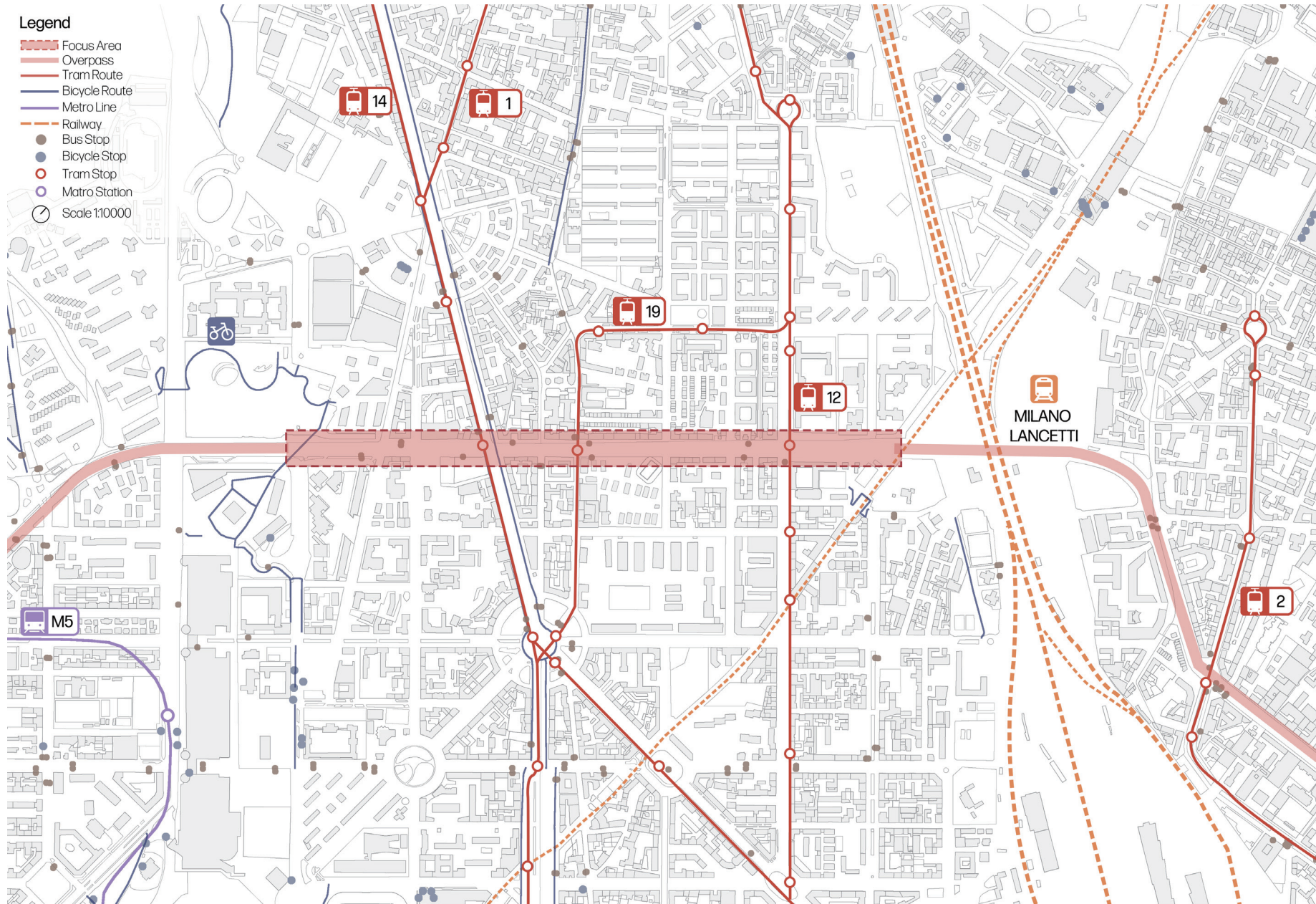
Milano Green Circle 90/91 is a project by the Municipality of Milan, implemented by Forestami. The overall project aims to plant 350 new trees and over 60,000 shrubs and perennial herbs along the entire route of the 90/91 trolley bus.

THE SITE SCALE - THE BRIDGE AS AN INTEGRATION OF PUBLIC SPACES



By linking fragmented schools, parks, and residential districts like Portello and Ghisolfa, the project transforms technical infrastructure into an integrated urban organism.

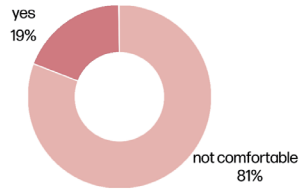
ANALYSIS OF SITE SCALE - URBAN FUNCTION



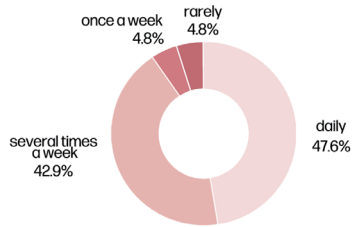
The accessibility analysis reveals that while the site is surrounded by a dense network of public services—including the M5 metro, tram lines (1, 12, 14, 19), and Milano Lancetti station—the bridge itself remains a "technical void" that disrupts seamless movement.

ANALYSIS OF SITE SCALE - USERS

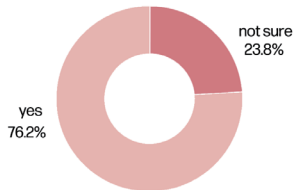
Perceived Comfort When Walking Here at Night



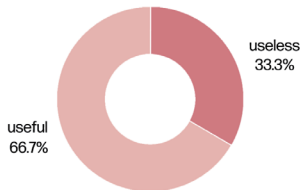
Frequency of Walking Through This Area



Perceived Need for Improvement in This Area



Perception of the Space Under the Overpass



Children/Students



Workers/Shop owners



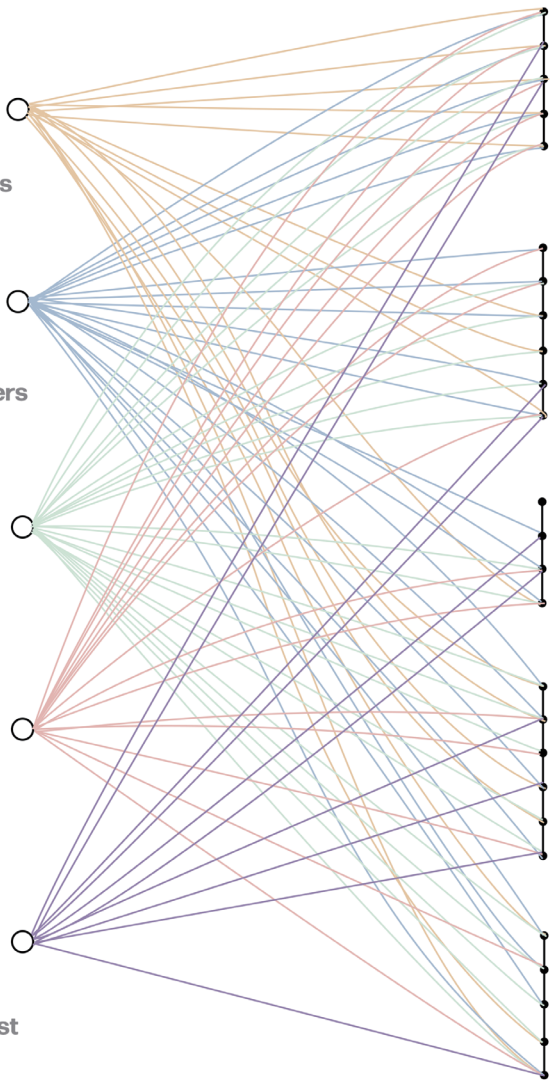
Local Residents



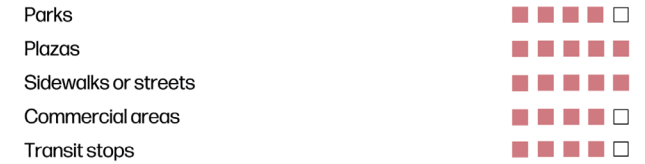
Customers



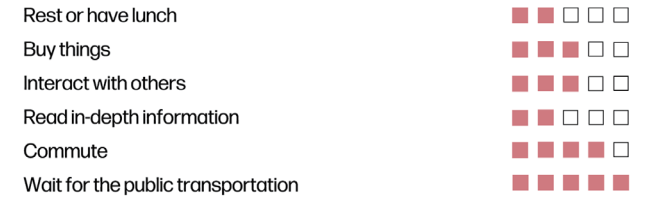
Passers-by/Cyclist



DESTINATION



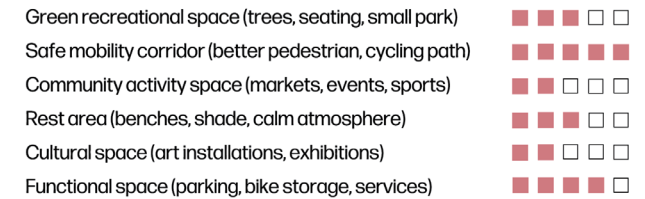
ACTIVITIES



DURATION



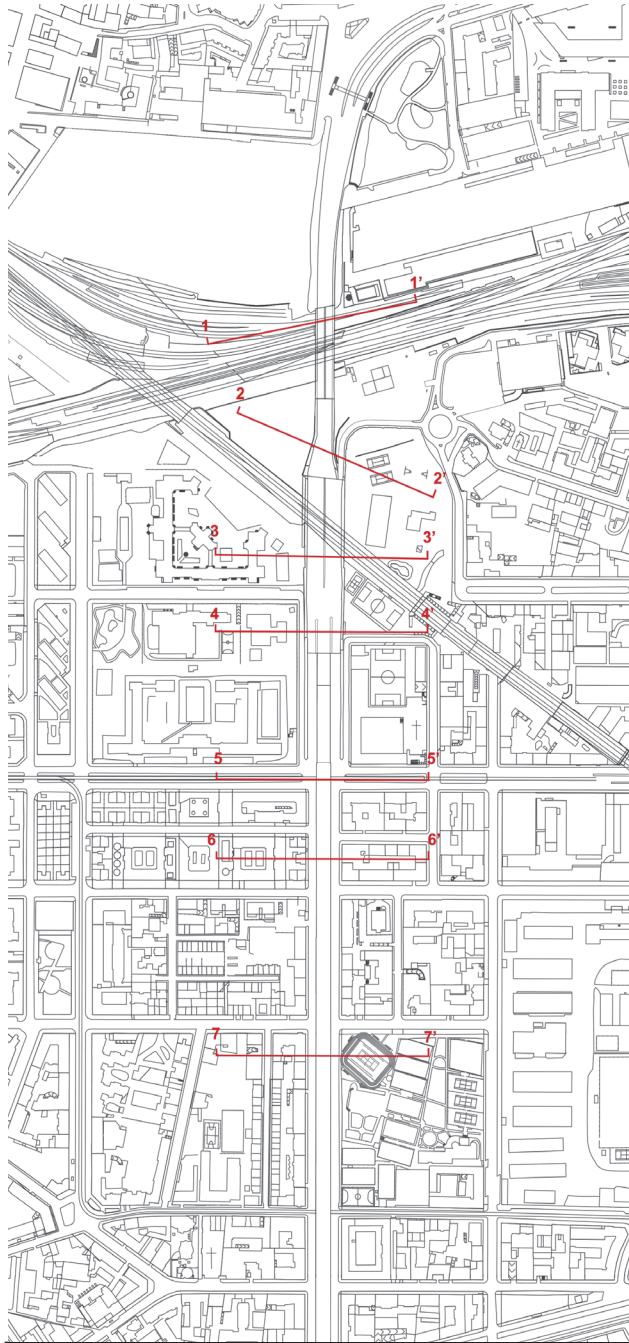
WANT



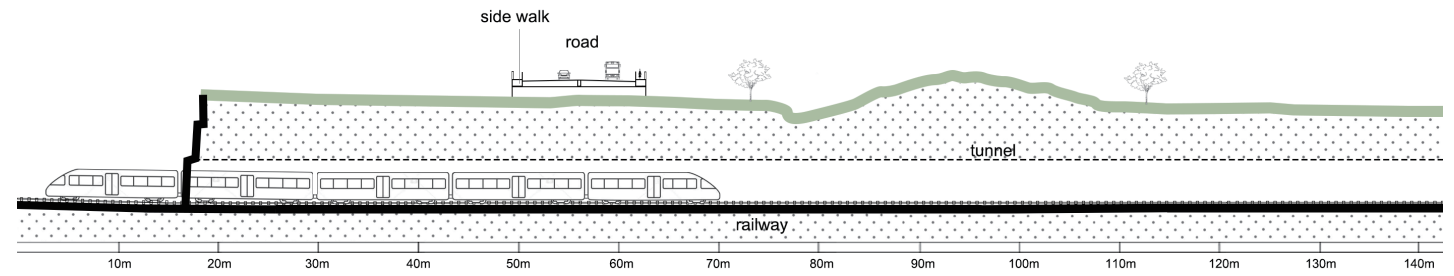
NEED



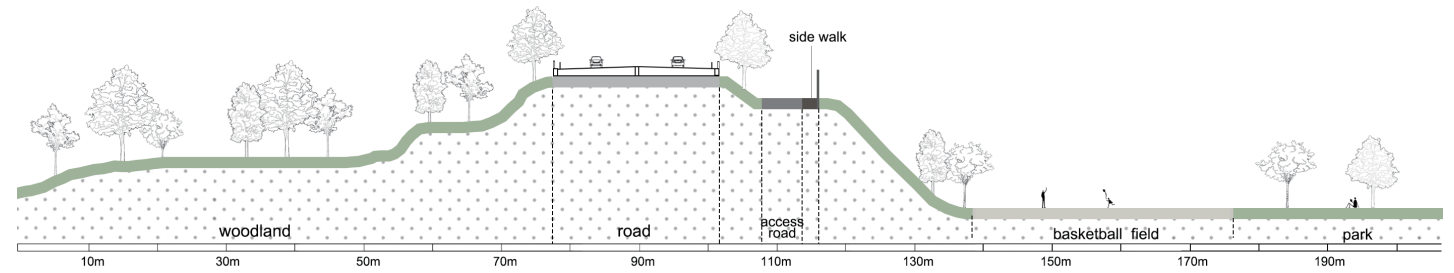
EXISTING SITUATION



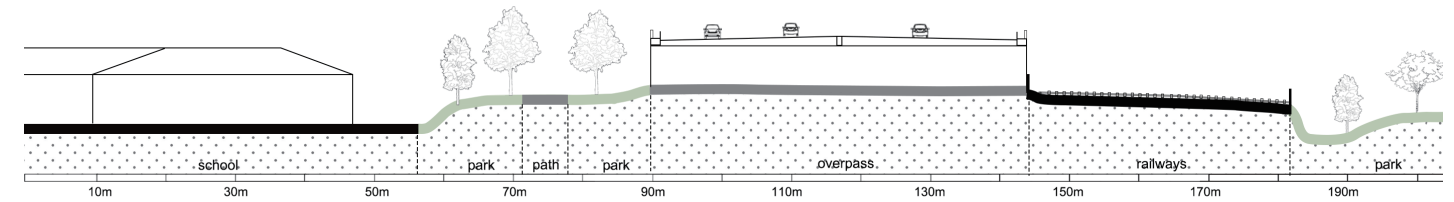
SECTION 1-1



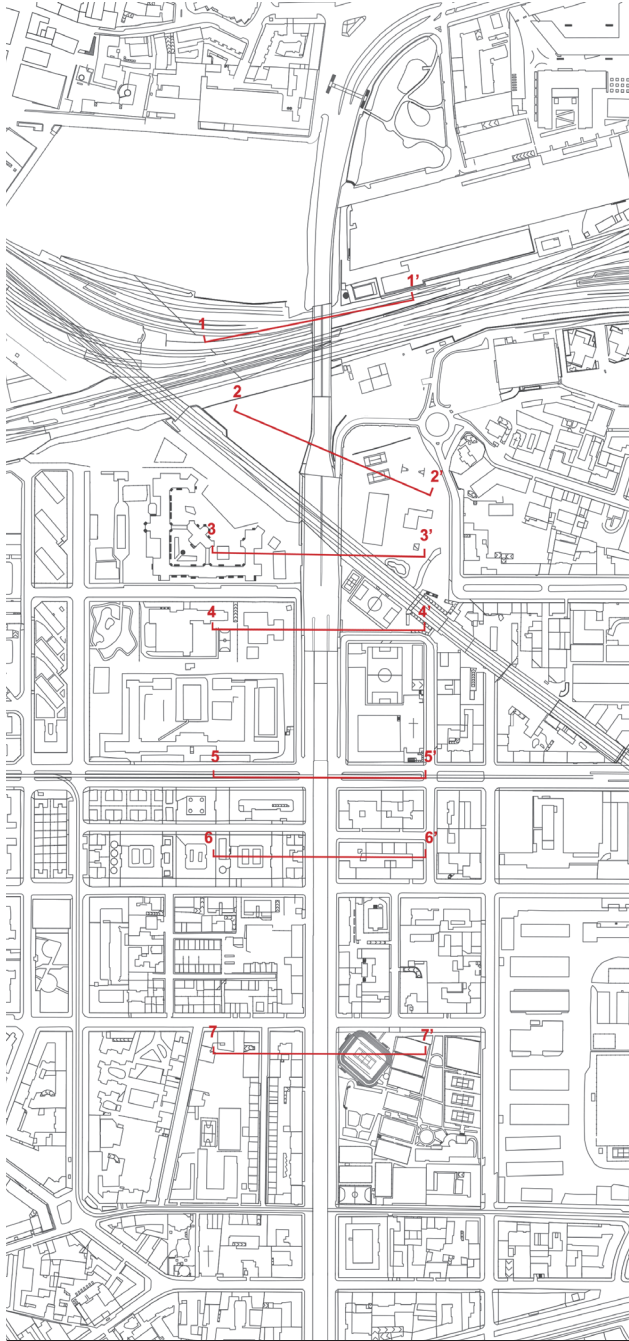
SECTION 2-2



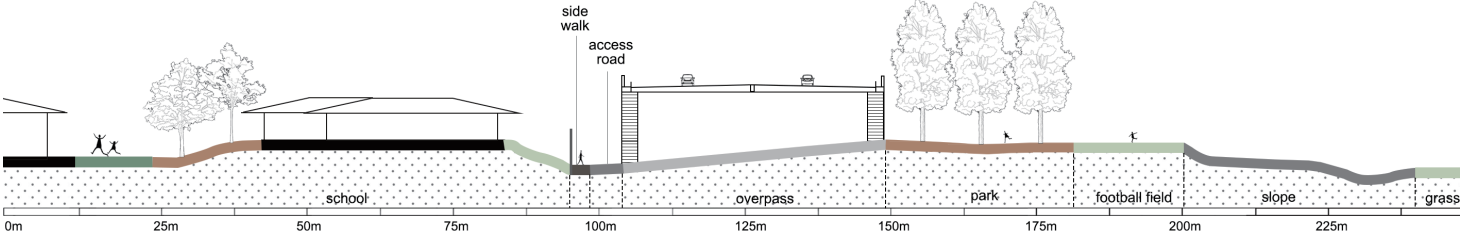
SECTION 3-3



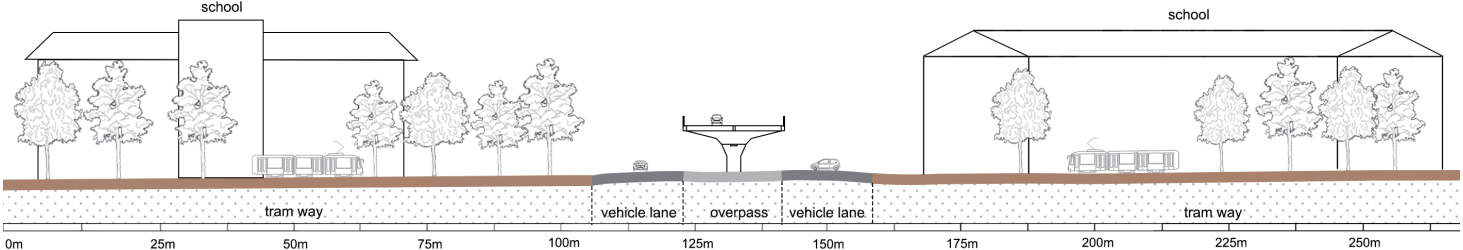
EXISTING SITUATION



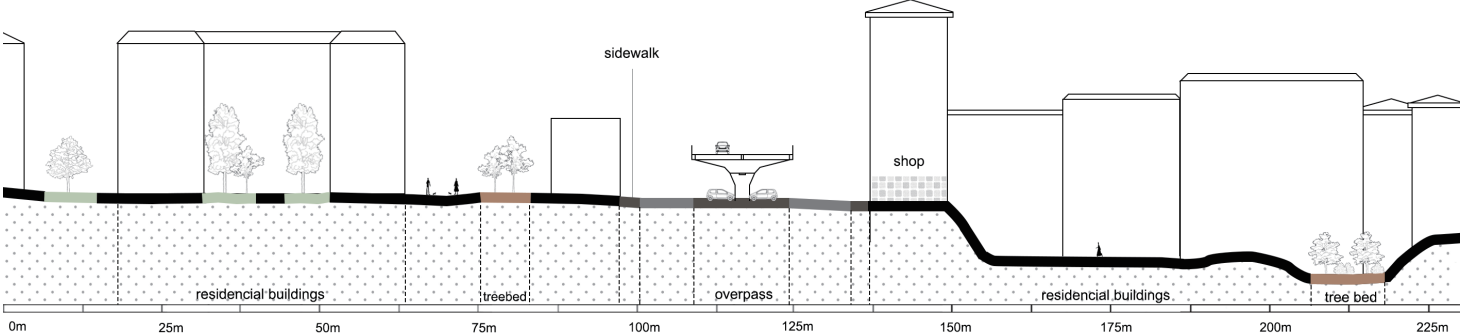
SECTION 4-4



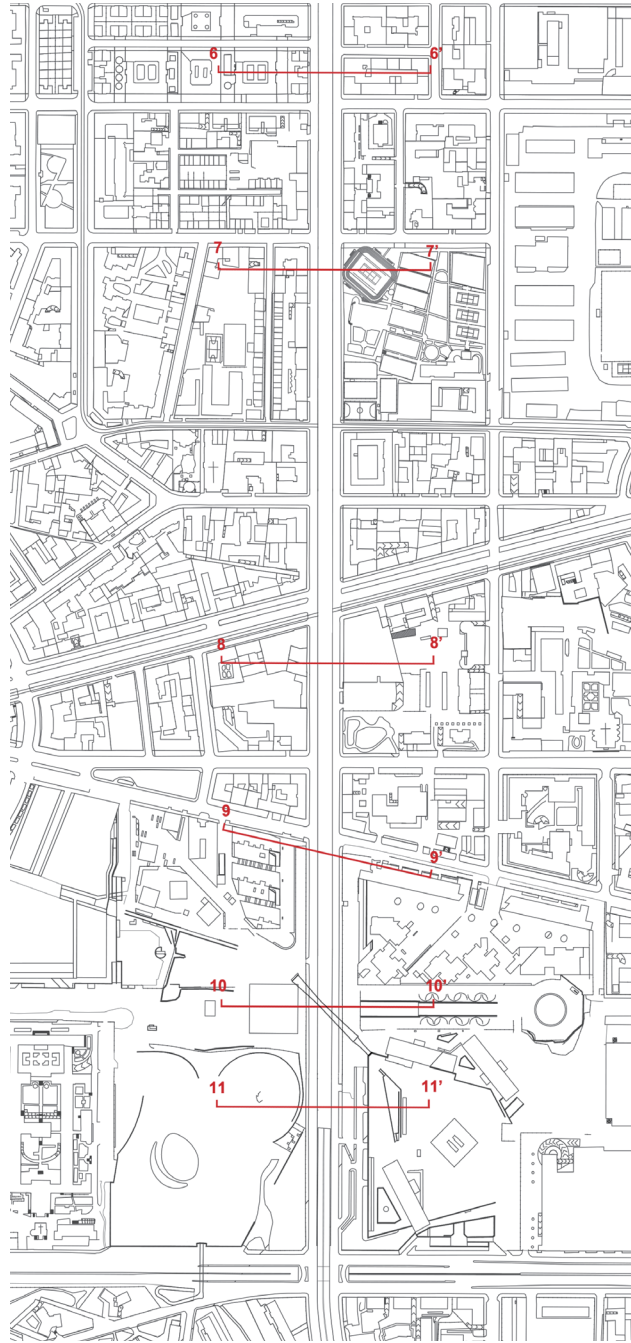
SECTION 5-5



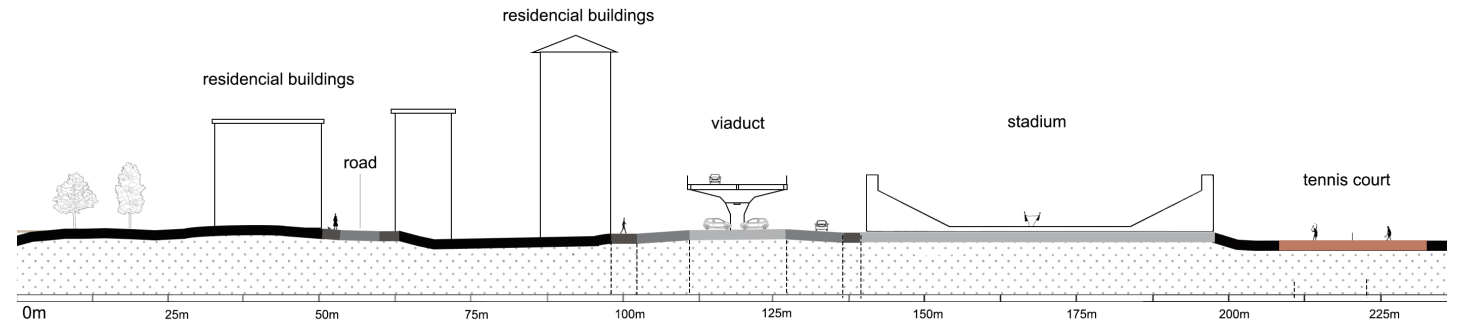
SECTION 6-6



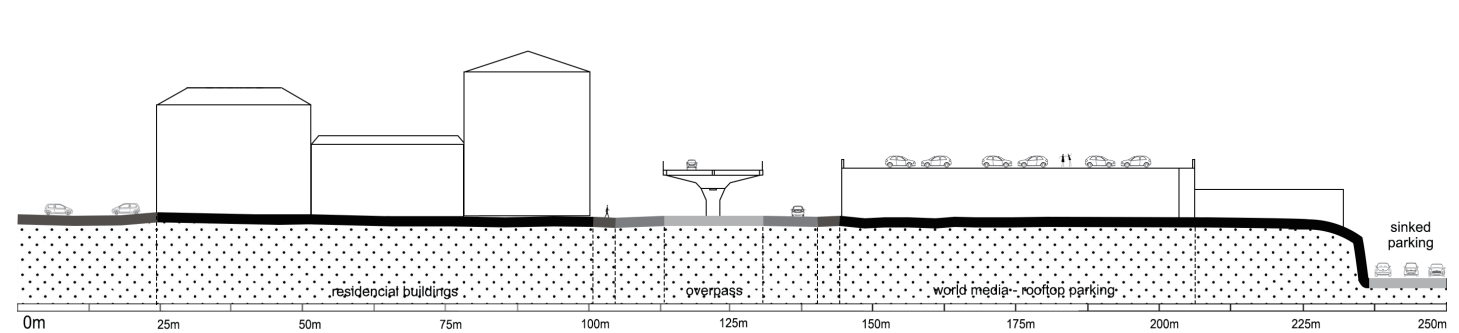
EXISTING SITUATION



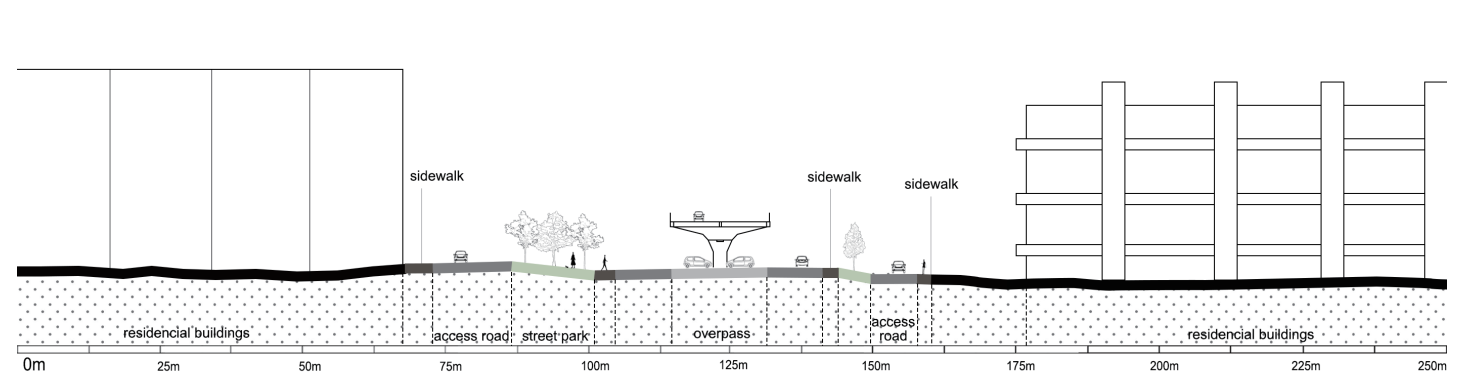
SECTION 7-7



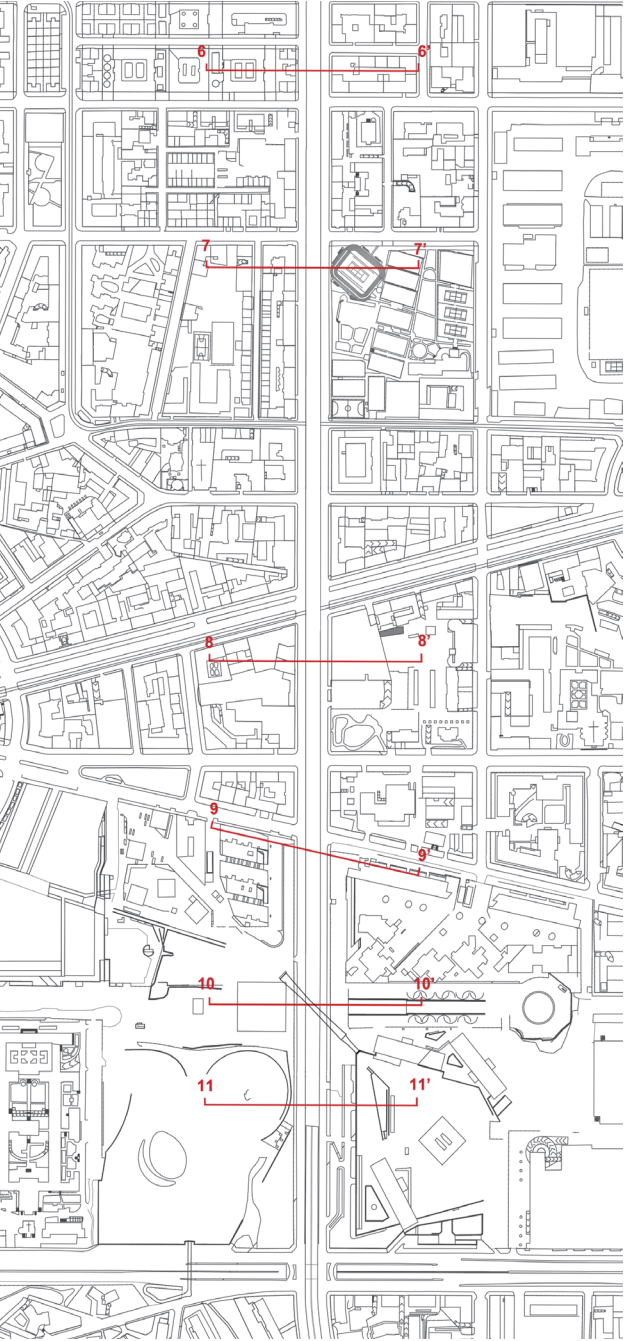
SECTION 8-8



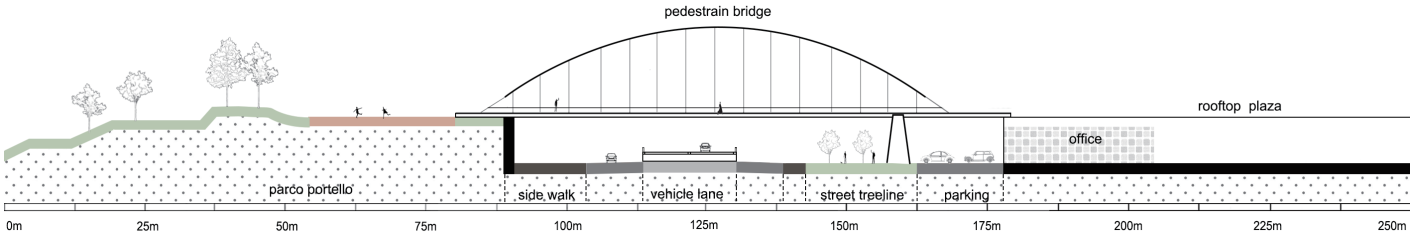
SECTION 9-9



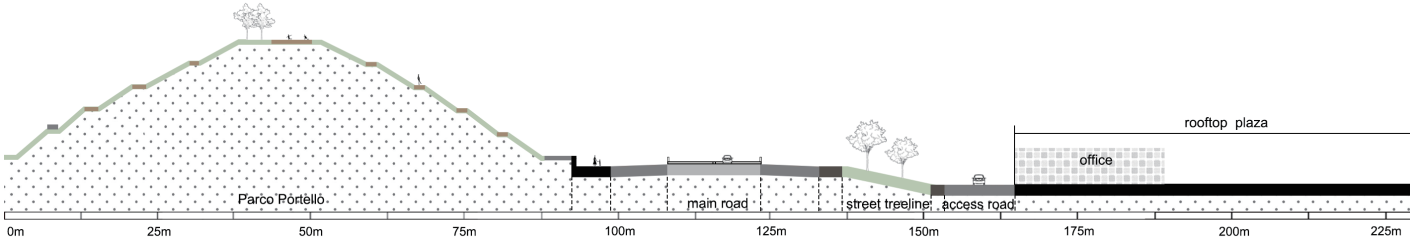
EXISTING SITUATION



SECTION 10-10



SECTION 11-11

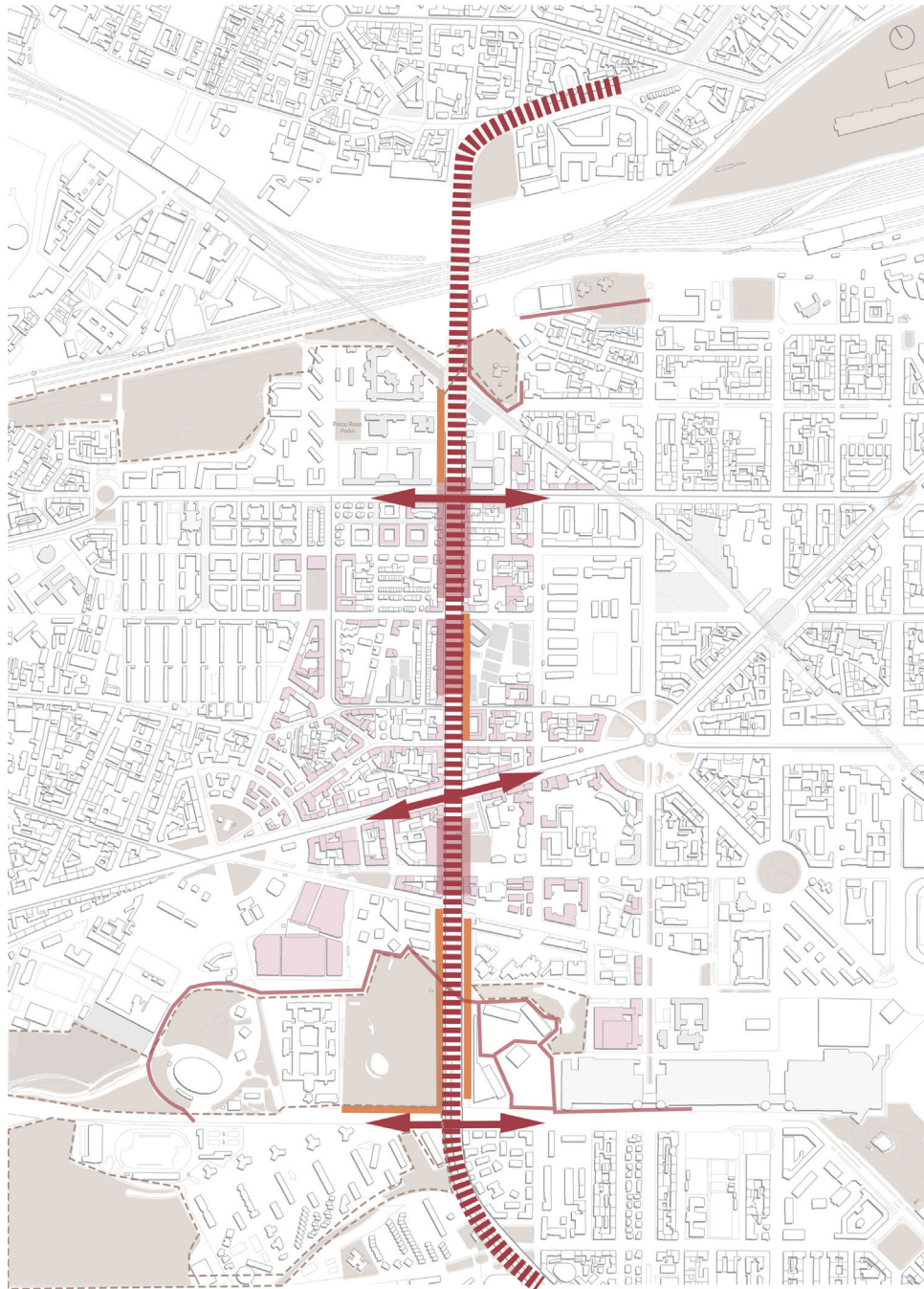


CHAPTER 6






CONCEPT



PROBLEM



LEGEND

-  barrier
-  parking
-  commerce
-  green spaces
-  bike path
-  pedestrian disconnect
-  complex junction

 0 50m 100m



obstructing commercial traffic



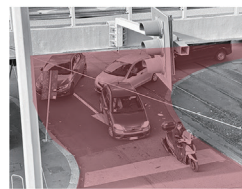
blocking passage
lack of bicycle lanes



parking spaces occupying public space



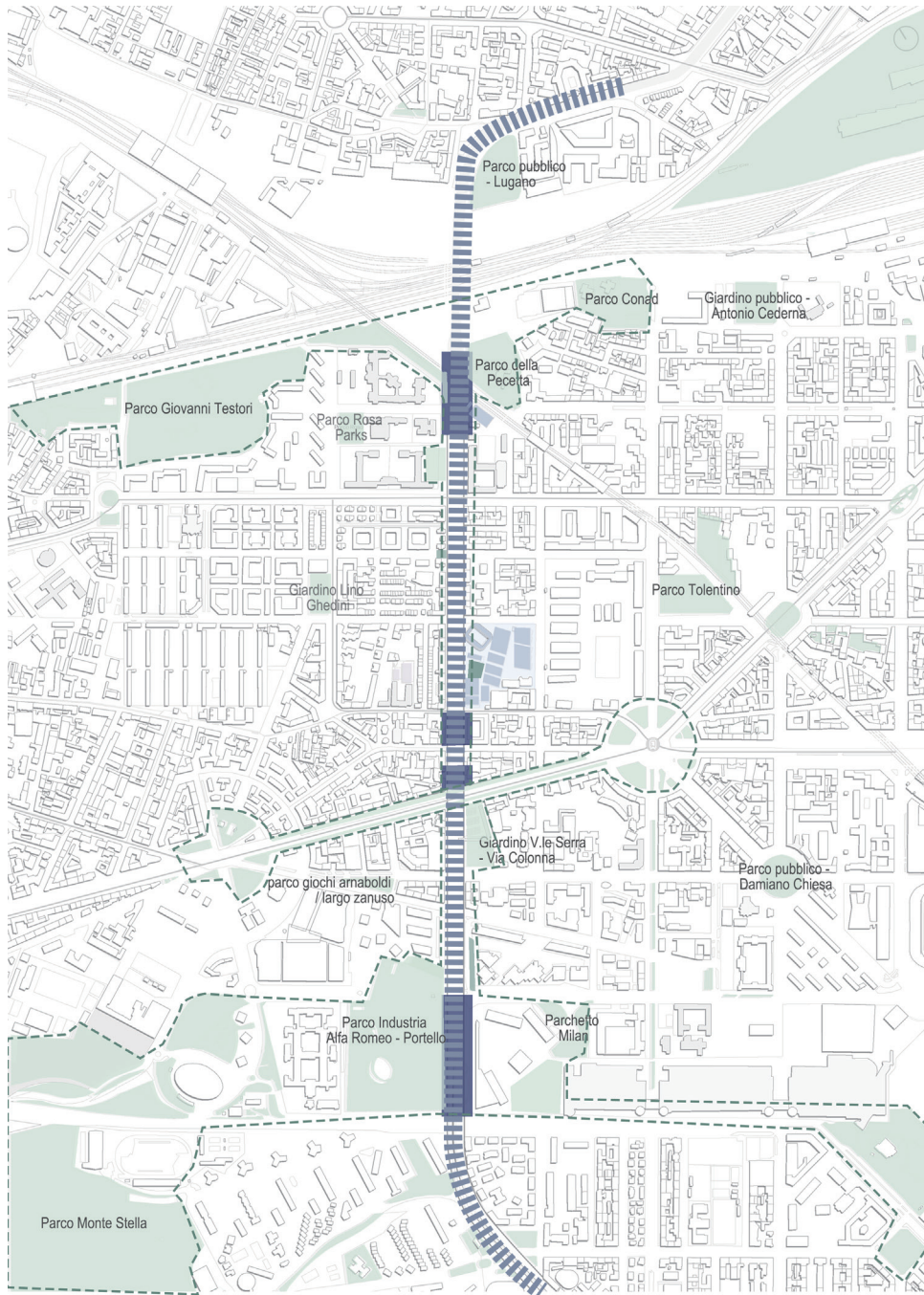
inconvenience for pedestrians








vehicle conflict

The Monte Ceneri corridor currently stands as a rigid physical barrier, causing profound urban fragmentation and social segregation within the city's organism. This "red zone" is defined by inefficient land use, where vital public space is occupied by temporary parking and neglected roadside voids, creating a hostile mineral environment for pedestrians. The existing infrastructure, lacking bicycle lanes and safe crossings, prioritizes high-speed transit over local habitability. This malfunctioning mechanism disrupts the continuity of the urban fabric, isolating the surrounding residential systems and public services from the broader city network.

OPPORTUNITY

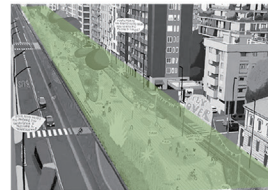


LEGEND

-  connector
 -  green spaces
 -  leftover space
 -  potential green system
- 



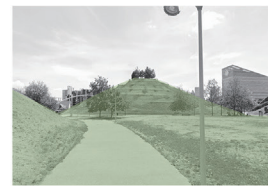
leftover space under the bridge



boulevard monte ceneri



pocket park



city park

The project redefines the bridge as a strategic integration of public spaces, acting as a vital "pearl" in Milan's Green Circle necklace. By transforming the viaduct into the "Boulevard Monte Ceneri," the proposal establishes a continuous sequence of green elements, including pocket parks and city parks, to restore ecological flow and human scale. This new social infrastructure functions as an organic connector that bridges the gap between the park system and the urban fabric. By integrating precise design elements and public facilities, the project replaces the former barrier with an accessible mechanism that revitalizes the neighborhood's identity and collective life.

PROPOSAL 1 GREEN LINEAR PARK



PROPOSAL 2

SLOW MOBILITY EXTENSION



primary bike lane



primary bike lane



pedestrian lane

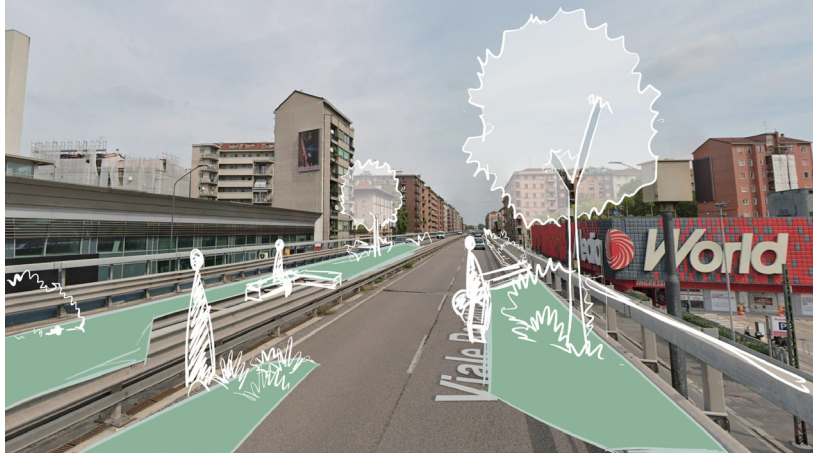
PROPOSAL 3

VEHICULAR NETWORK



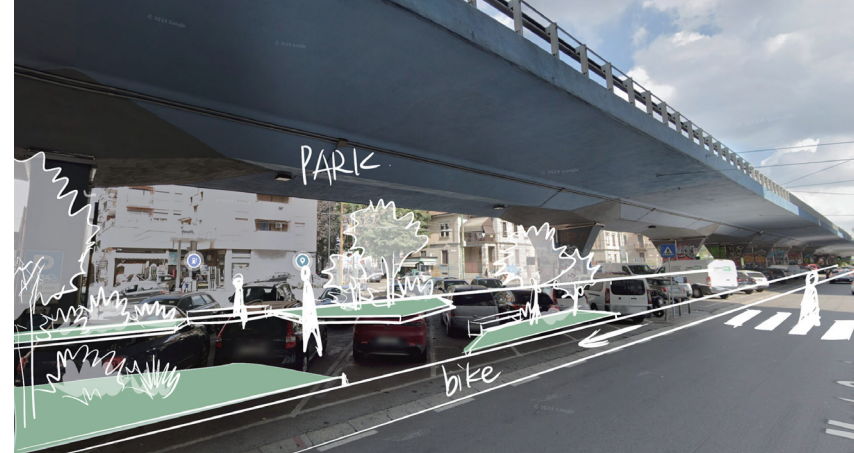
— — — existing two-way road — planned two-way road

Proposal 1



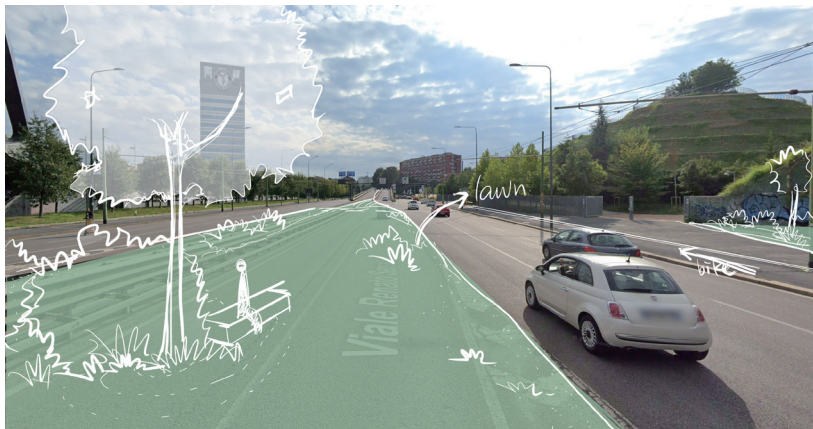
The overpass no longer constitutes a barrier, but instead becomes an element linking the city's current urban parks (e.g. the Parco Portello to the north and the planned Scalo Farini green corridor to the south), meanwhile, a green linear park to respond to the call "green circle 90/91".

Proposal 2



The express lanes on the overpass will be turned into walkways for pedestrians. Bicycle lanes will be added beneath the overpass to reconnect the routes previously interrupted by the elevated structure, meanwhile corresponding to the "Cambio" project. Additionally, parking will be available under the bridge for people to park their vehicles.

Proposal 3



The overpass will be transformed into an inclusive doublelayered space tailored to its surroundings/context, creating a conveniently accessible, high-quality area for people to rest, linger, conduct business, and socialize.

Proposal 4



To alleviate traffic congestion on roads beneath the overpass, suitable one-way streets in the surrounding area will be converted to bidirectional lanes. This can optimize the capacity of existing streets to ensure smooth and distributed vehicular flow.

CHAPTER 7

MASTERPLAN



MASTERPLAN



MASTERPLAN ANALYSIS

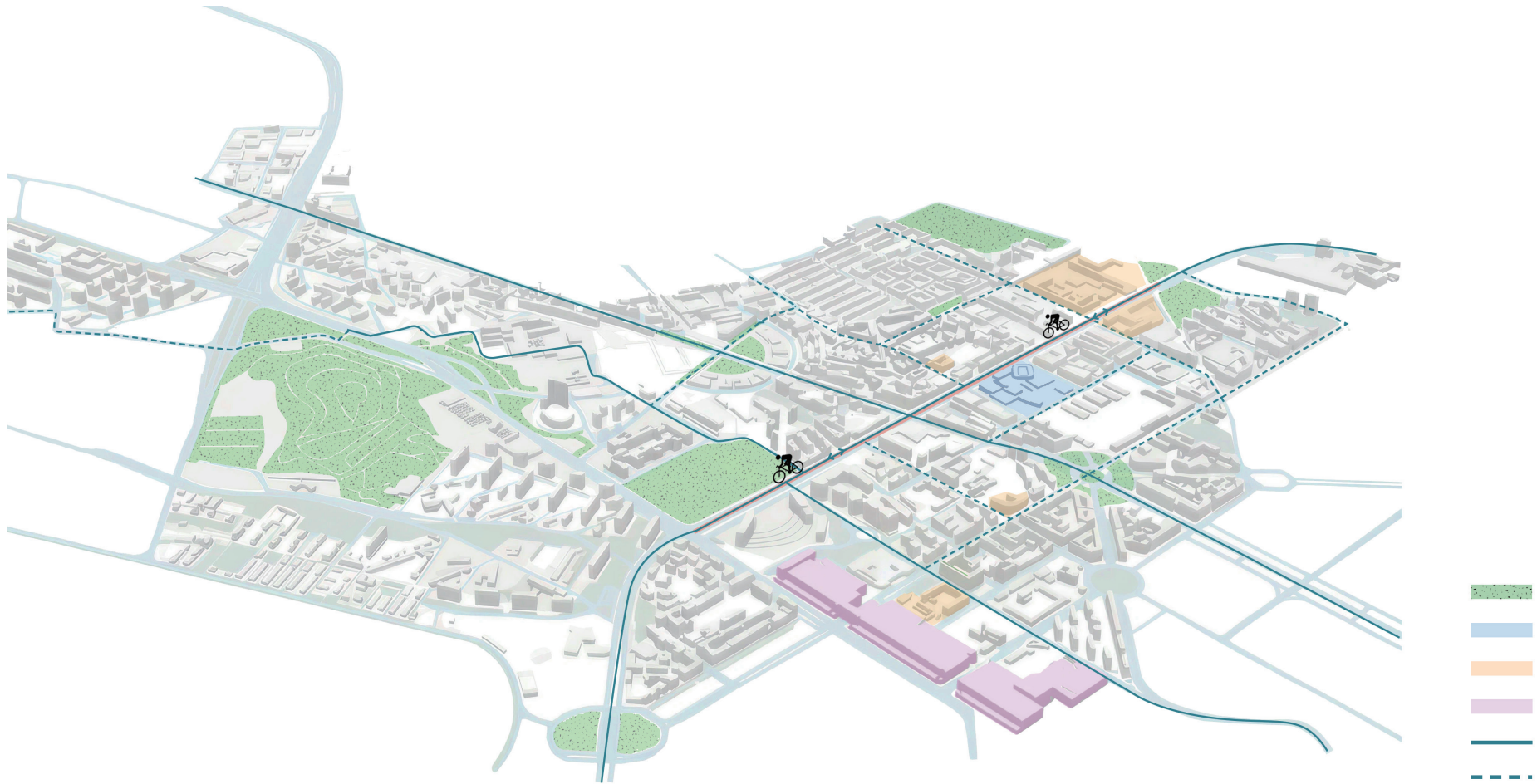
vehicle connection



This diagram shows a traffic redistribution strategy developed after removing vehicle lanes from the Monte Ceneri bridge. The existing road network (red lines) consists of streets that are currently occupied by on-street parking, which limits many of them to functioning as one-way routes. The proposal reorganizes these streets into bidirectional roads and introduces additional two-way connections on selected wide streets (blue dashed lines). By reallocating street space from parking to movement, the plan improves network continuity and maintains smooth traffic flow in the surrounding area.

MASTERPLAN ANALYSIS

BIKE CONNECTION



This diagram illustrates the updated bicycle network, integrated with surrounding public amenities. Solid blue lines indicate primary lane forming continuous south-to-north, east-to-west spines. Secondary connectors link this main axis to surrounding neighborhoods, schools, sports center and green spaces, encourage slow mobility across the area. Together, these lanes organize a clear and connected cycling network across the area.

MASTERPLAN ANALYSIS

Park Connection



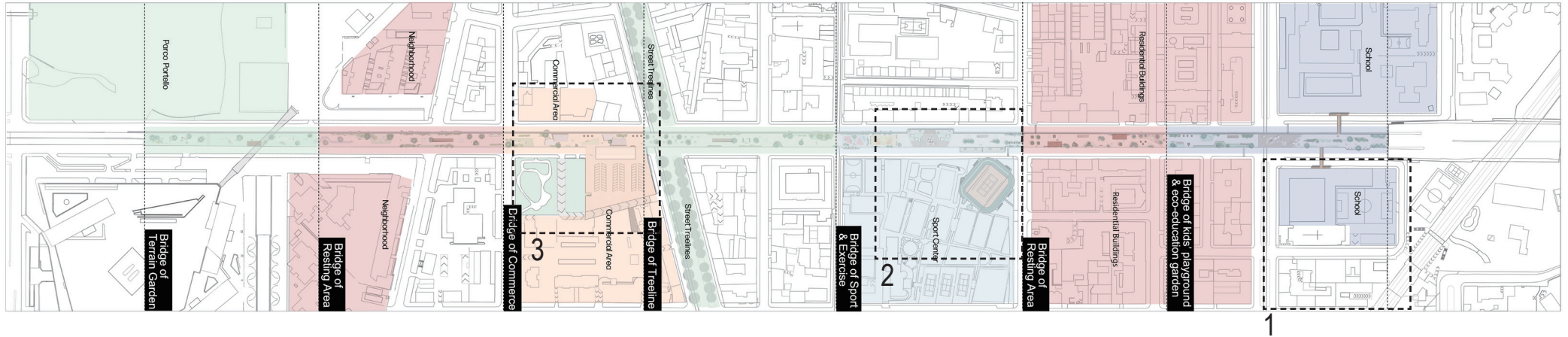
This diagram presents the proposed ecological corridor connecting existing parks and green spaces around the site. The designed pedestrian green route forms a continuous landscape spine that links fragmented open spaces into an integrated network. Acting as a green corridor on the bridge, it strengthens ecological continuity while providing a walkable recreational path.

MASTERPLAN ANALYSIS

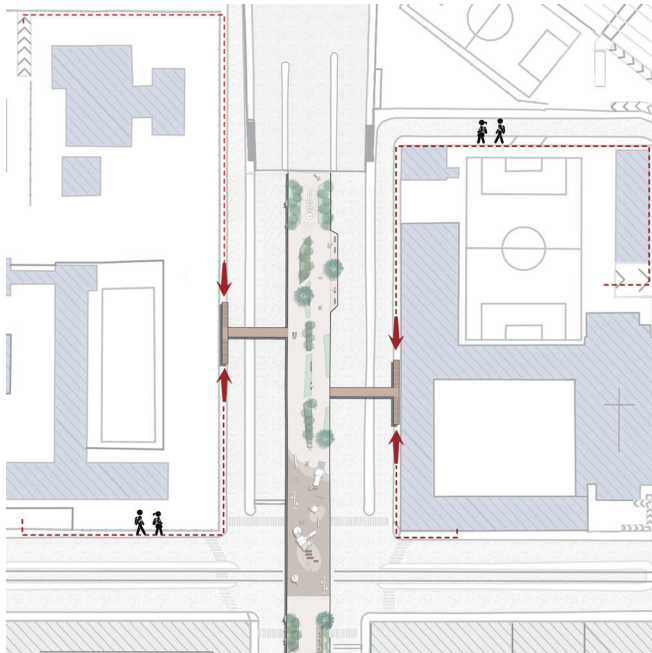
Ground Floor



Upper Floor



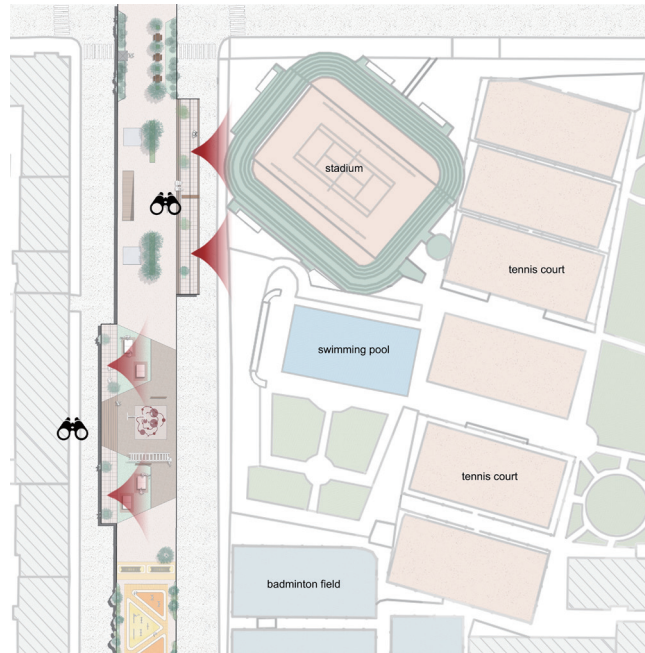
NODE 1



Pedestrian Connection

This detail shows the seamless integration of pedestrian bridges linking the upper promenade to surrounding buildings. By creating direct physical access, the design fosters continuous social flow between the community and the elevated landscape.

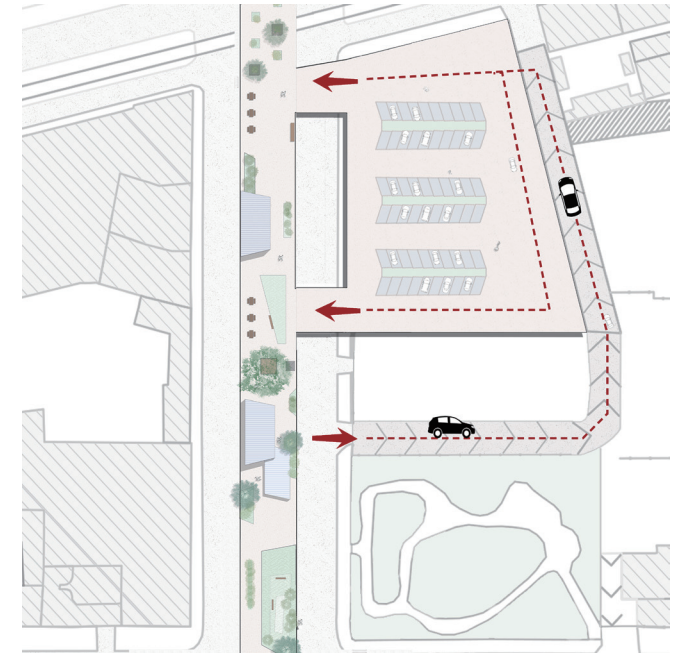
NODE 2



Stadium Grandstand

The viaduct is transformed into an elevated grandstand overlooking the adjacent sports center. This strategic intervention repurposes the infrastructure as a functional viewing platform, synchronizing public leisure with the existing athletic facilities.

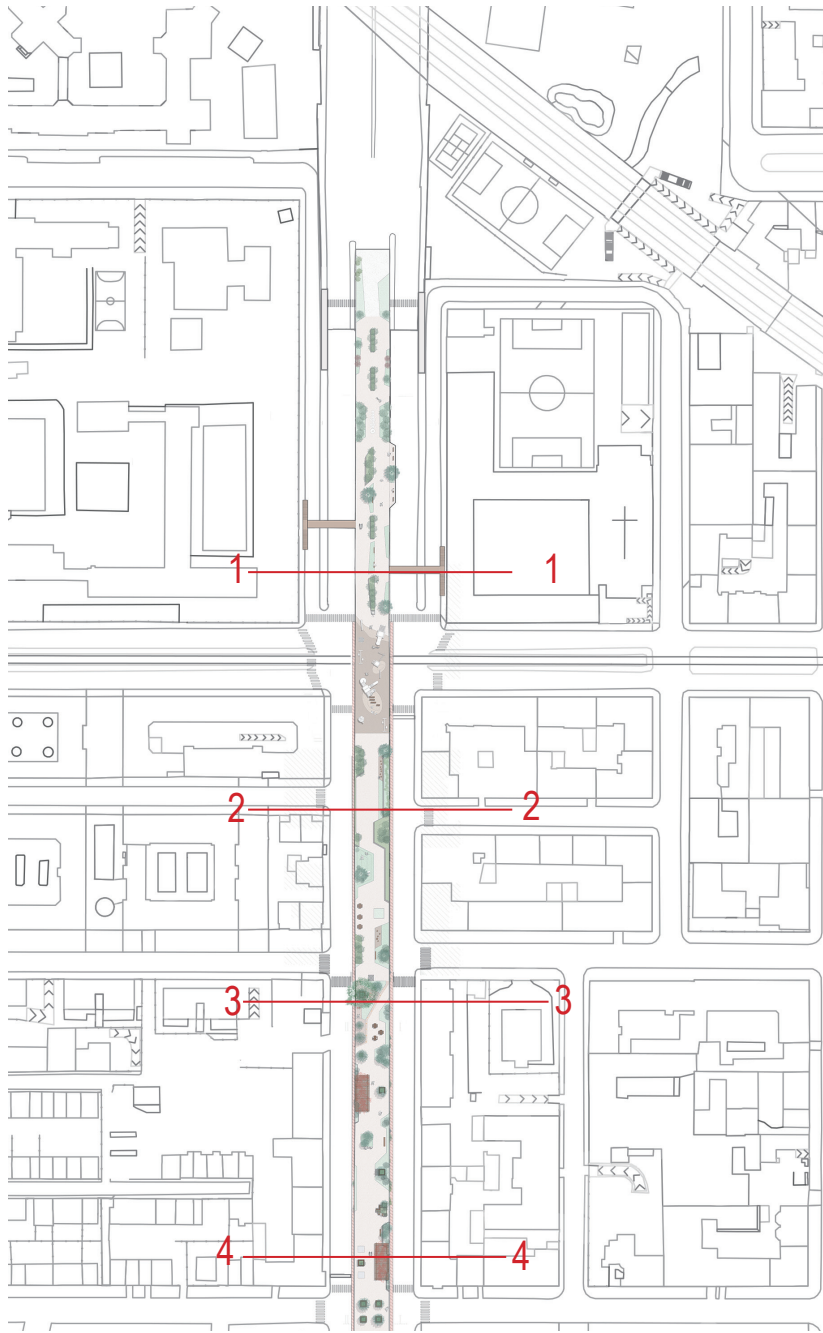
NODE 3



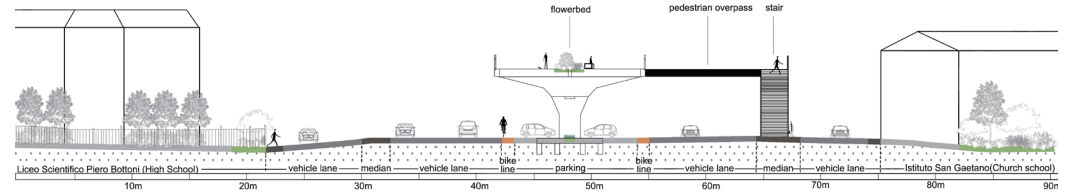
Rooftop Parking Route

This diagram illustrates the optimized vehicular flow connecting the street level to the integrated rooftop parking. By organizing clear access points, the design ensures the bridge remains a functional urban organ while prioritizing pedestrian-friendly zones.

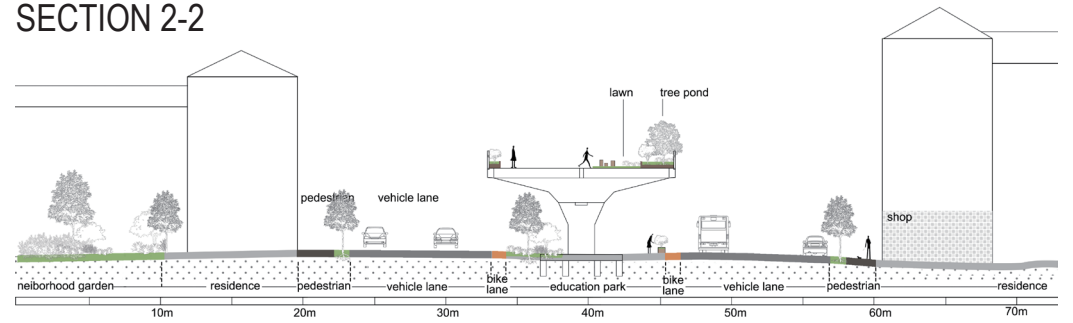
SECTION



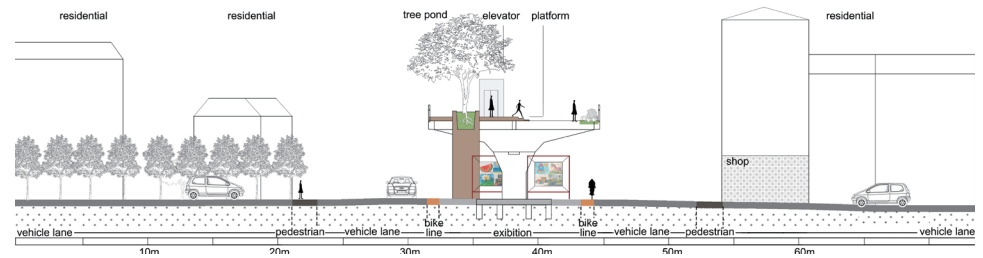
SECTION 1-1



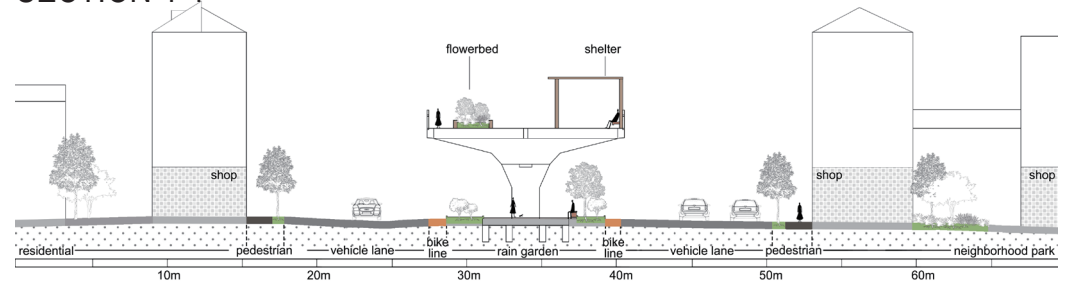
SECTION 2-2



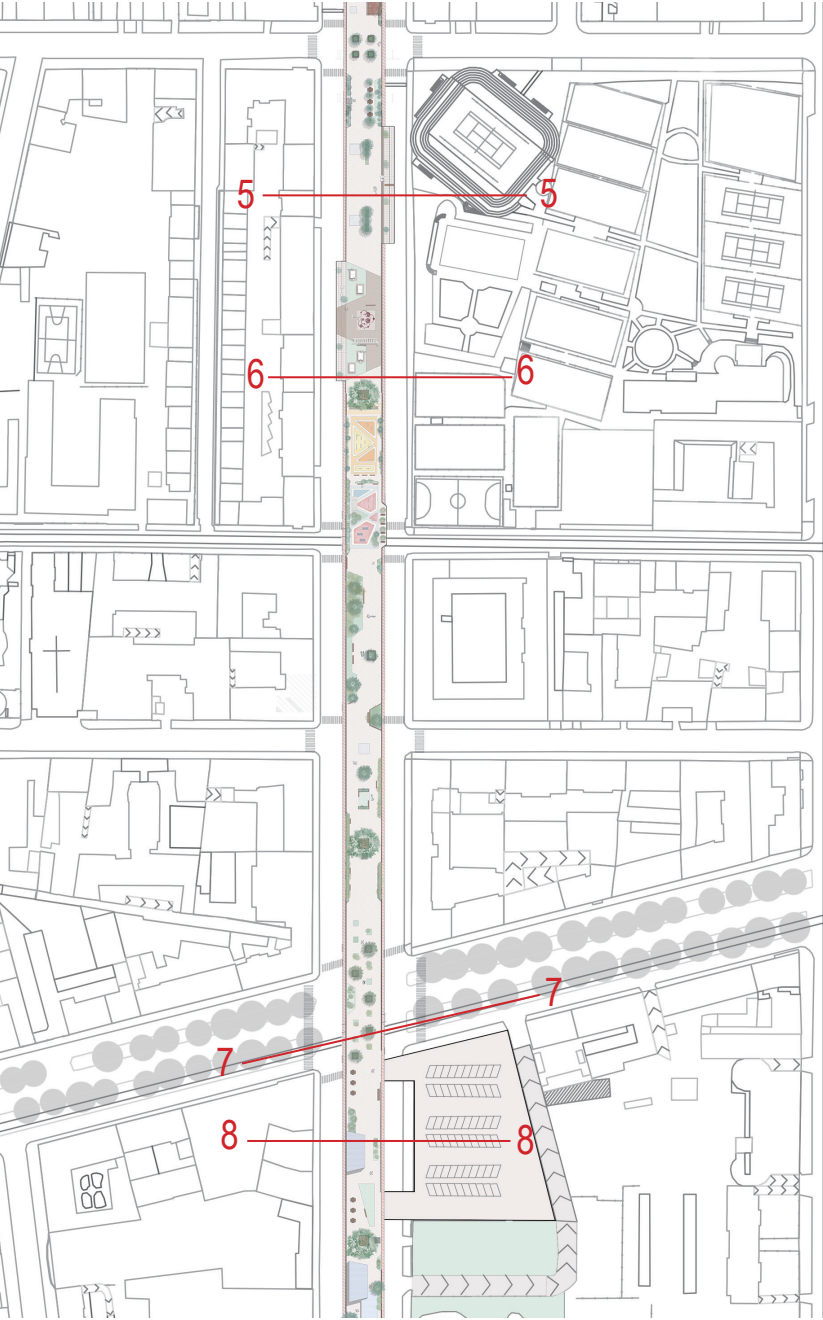
SECTION 3-3



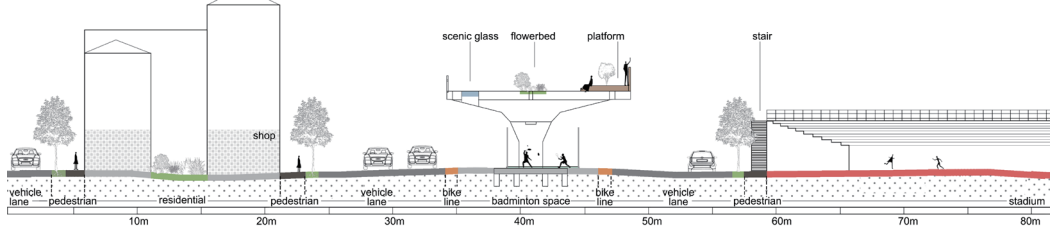
SECTION 4-4



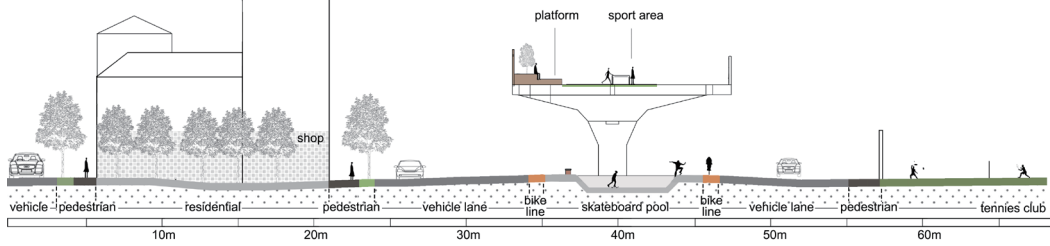
SECTION



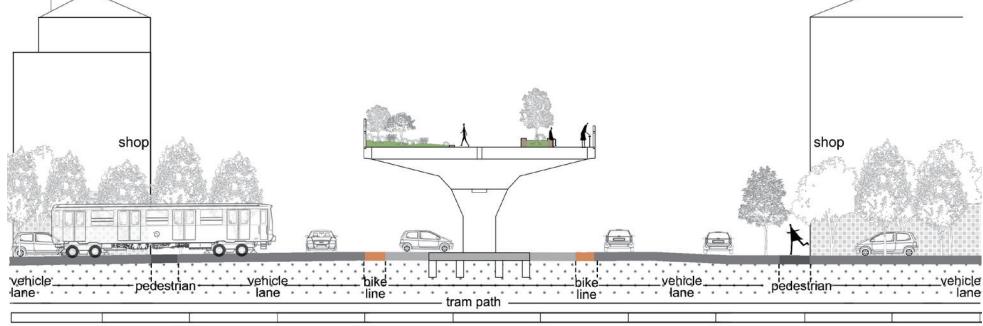
SECTION 5-5



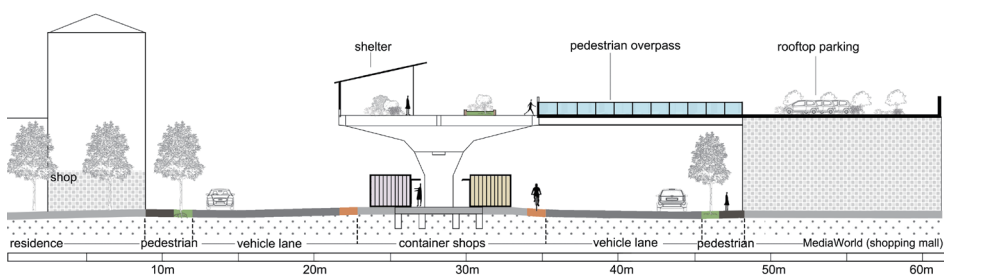
SECTION 6-6



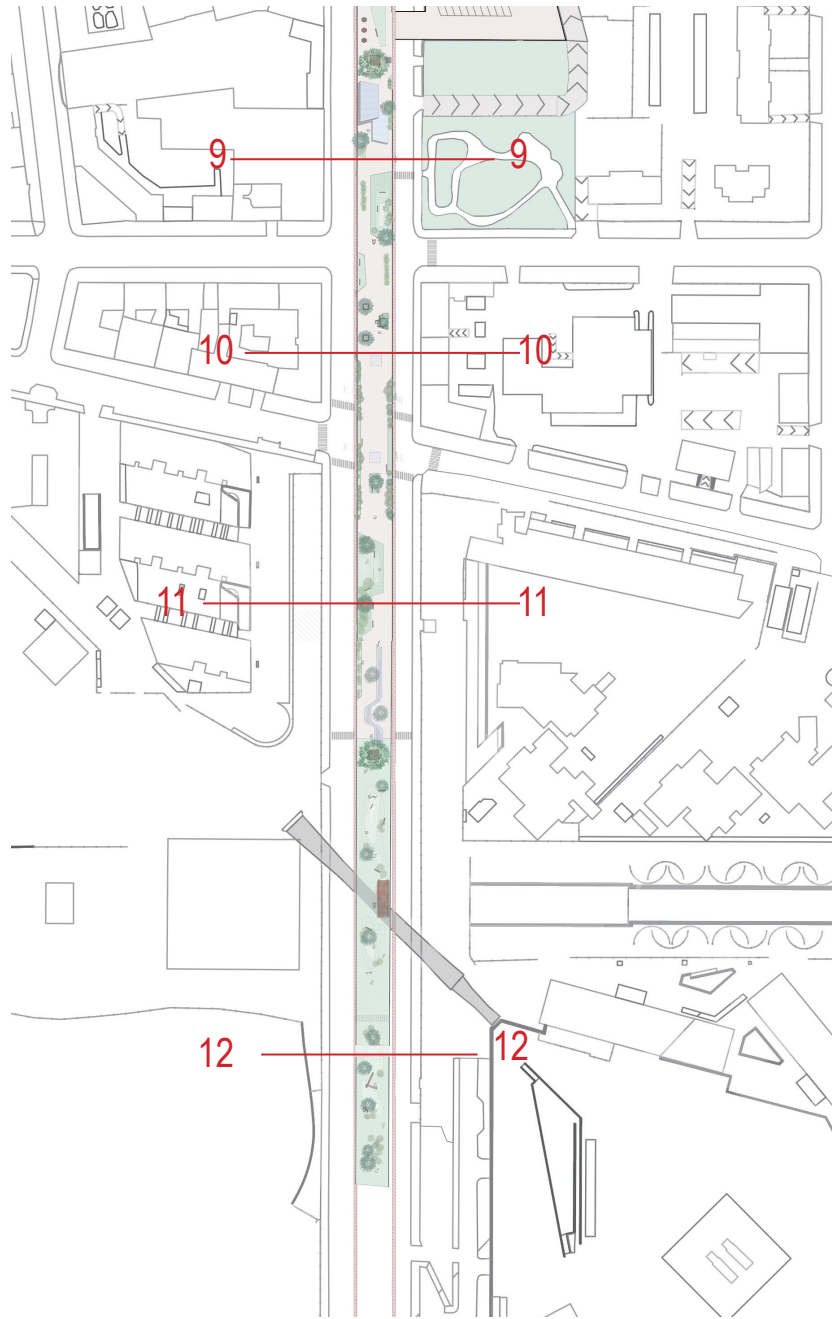
SECTION 7-7



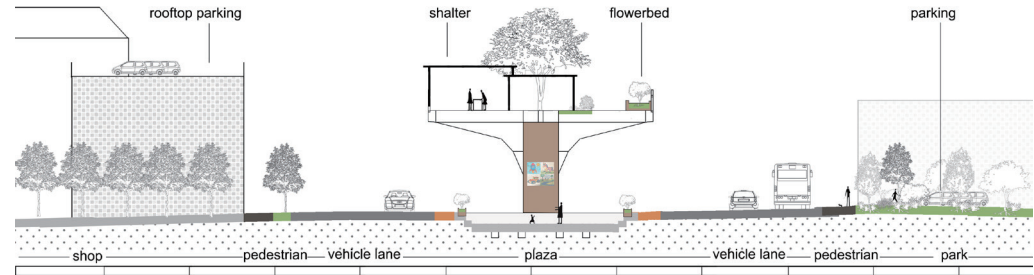
SECTION 8-8



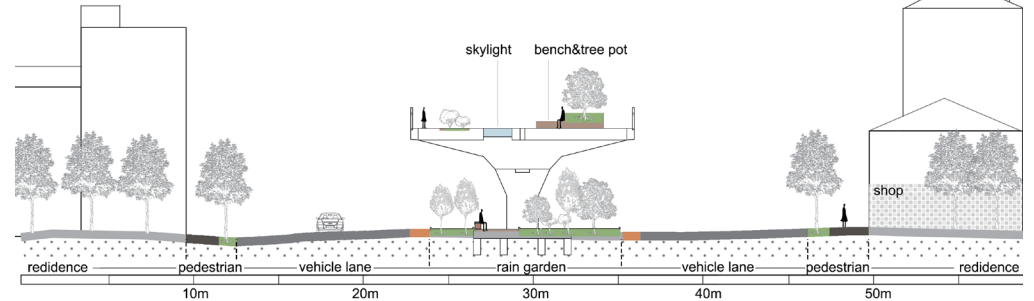
SECTION



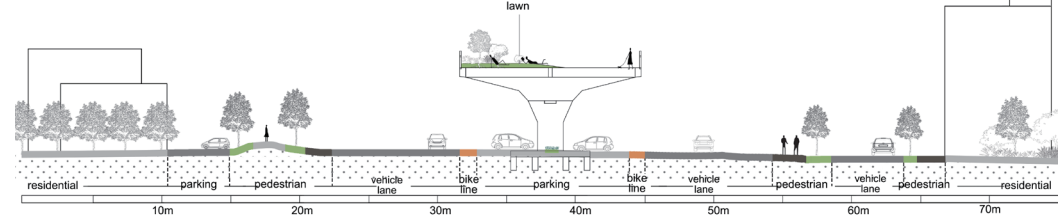
SECTION 9-9



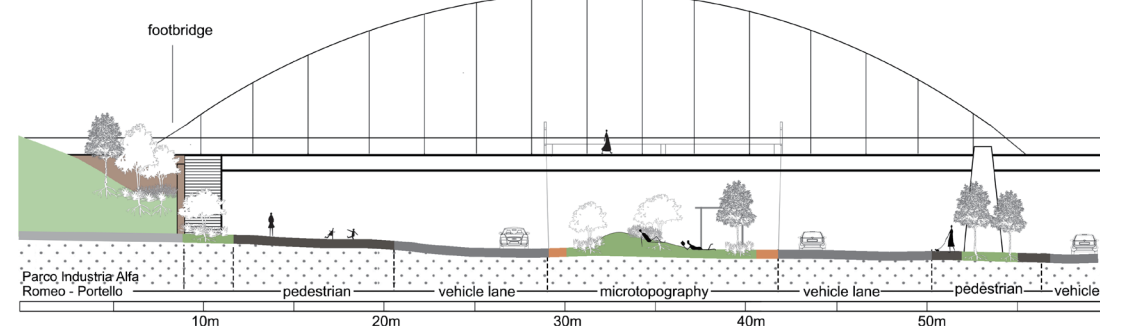
SECTION 10-10



SECTION 11-11



SECTION 12-12

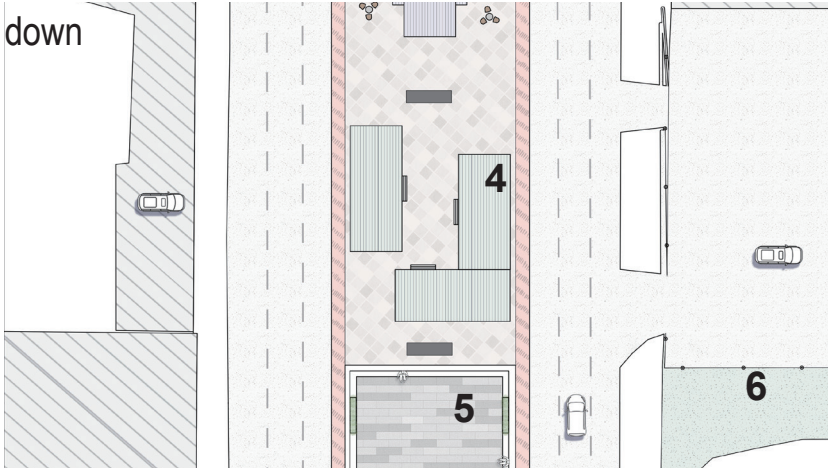
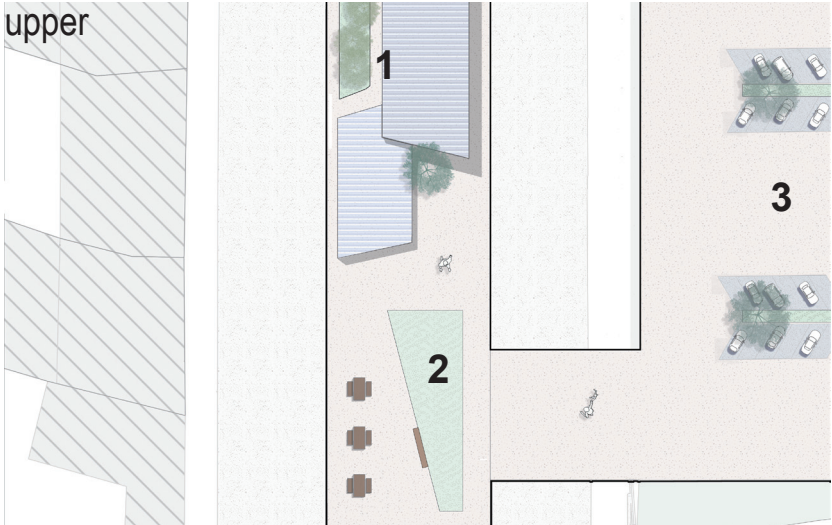


CHAPTER 8

DESIGN DETAILS DISPLAY



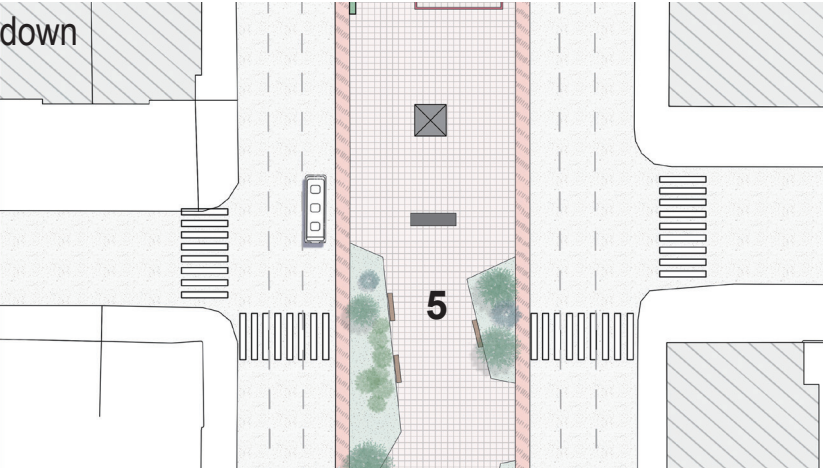
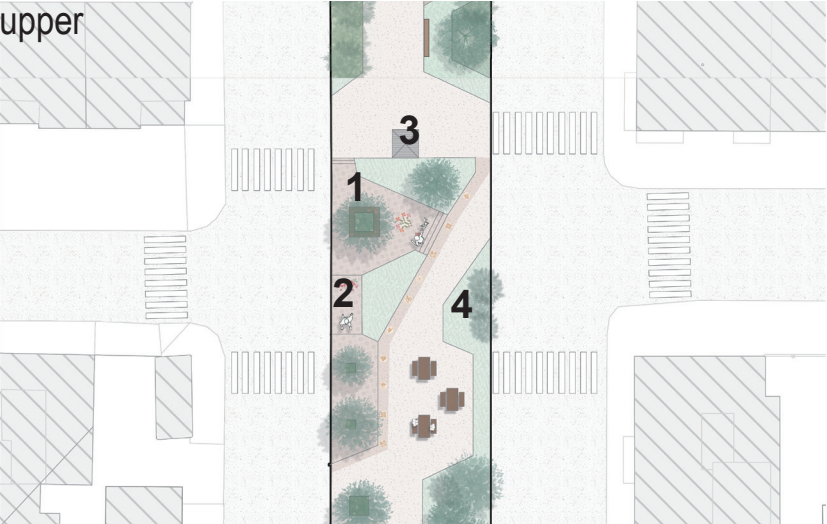
NODE 1 BRIDGE OF COMMERCE



- SCALE 1: 800
- 1. shelter
 - 2. lawn
 - 3. ecological parking lot
 - 4. container market
 - 5. community park
 - 6. leisure square



NODE 2 BRIDGE OF EDUCATION



- SCALE 1: 800
- 1. raised platform
 - 2. plant pattern paving
 - 3. scenic elevator
 - 4. educational flower border
 - 5. pocket park



CHAPTER 9

REFERENCE & CASE STUDY



PLATFORM PARK

Designed by TERREMOTO

Location: California, Los Angeles, USA — Type: Landfill, Pocket Parks, Under the Bridge — Built: 2019



SHANGHAI SUPER TUBE

Designed by FISH

Location: Shanghai, China — Type: Pocket Parks, Under the Bridge — Built: 2023

To create a public space that integrates the functions of convenient access, gathering, cafe and creative Installation.



REFERENCE

PREVIOUS TRIAL: THE UNPARK – URBAN NUDGING PARK PROJECT



For three days in September 2021, a series of free public events took over a parking lot beneath the Serra–Monte Ceneri overpass in Milan, located between Via Plana and Via Bartolini. The UNpark has the ambitious goal of encouraging citizens and the public administration to trigger a shared process of regeneration of that infrastructure, which can also be scaled up in other contexts.

