POLITECNICO DI MILANO | a.a. 2018-2019
MSc SUSTAINABLE ACHITECTURE AND LANDSCAPE DESIGN

ROUTE BETWEEN CULTURE AND NATURE

POLITECNICO
DI MILANO 1863

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CONTENT

1 ABSTRACT

1. Background and Research
The site is in Rezzato, located in the city Brescia. It is known for the production of its quarry Marble. It Became the source of stone since 1950s, and for now it is abandoned.

First of all， we studied the history of marble, the Botticino Classico extraction basin has been used for over two thousand years. In Roman times the abundance of stone and marble in the Botticino area allowed for the development of a conspicuous epigraphic tradition, while the extraction and processing of marble brought an advancement in the technological level of the workshops, allowing for the first work organization of "industrial" type.

At the beginning of the 20th century the block was extracted in Botticino and marble was transformed in Rezzato; the first mining companies to organize work, train young people and promote specialization were the cooperatives.So the quarry is important meaning for the local residents.

The aim is to transform this quarry area to combine nature and find ways to connect with the outside world, thereby attracting tourists.

Secondly, we studied the regional relationships of site in big scale of Lombardy to explore the potential of the site. For example, from the terrain and the urbanization, the site is located in the north with many mountains and few cities, the south is flat and multi-city. In terms of traffic connections, the site is connected to many high-speed bicycle lanes, and the traffic is convenient. In terms of attraction, the venue may become the connection point between many UNESCO and nature parks.

Among all those relationships， bicycle lanes are most connected and have potential to extend. Tourists will easy to bring in by these lanes. There are 5 official suggestion itineraries which are related to site are founded：

Several days trip, through Italy national bicycle route BI12 Ciclovia Pedemontana Alpina
Several days trip, through Italy national bicycle route BI20 Ciclovia Aida
1-day trip, itinerary through Rezzato, Botticino and Brescia
1-day trip, itinerary through Rezzato, Gavardo, Serle and Botticino
1-day trip, itinerary through Rezzato, Gavardo, Salo and Lonte

Overall, in order to better explore the potential of tourism, mining cultural and green resources will be used in the design. In order to better connect the outside with the site and bring in tourists, the existing bike lanes will be connected and expanded.

2.Strategy

Based on the analysis and researches we have done, to fully discover site's tourism potential. Three strategy about design structure are proposed:

Strategy 1: Strengthening connections and bring in tourists:

We have Studied the relationship between existing bike route and site. We found that there are 5 existing bicycle routes next to our site. For design, we create new tourist path through all site area. At the end, connection between new route and existing route is built.

Strategy 2: Experimenting new relation between tourist route and landscape:

We have studied existing landscape, including dense forest, sparse forest, open grass space, farmland, abandoned quarry area and build-up area. Then try to connect existing landscape. So that we can decide new route, making the route cross as much as possible landscape, changing on both sides.

Strategy 3: Selecting nodes be related to route:

We have studied existing attraction, we found that site area is lacking attraction. So we place new nodes to attract people, and put them on average distances to keep tourists interested in. Put nodes in design route to make relation.

Based on the Strategy of design structure, the concepts we give are record history and discover present relationship between nature and culture. The strategy of function for each node area are proposed.

Strategy for area 1: There is a long history of mining marble in this area since 1950s, quarry have important influences for local residents, abandoned quarry can be looks like heritage. Due to the existing marble museum in Brescia is in bad accessibility, so we propose to design a new museum.

The museum we propose give it a new form includes exhibition function and accommodation function, because there are two Italian national bicycle routes in about 3 days, and our place can be their stopping point.

Combining the exhibition with accommodation, the rest is the person watching the exhibition, and the living environment is the exhibition environment, which is more conducive to the promotion of marble culture.

Strategy for area 2: To enjoy the varieties of changing levels of landscape in forest, a bridge is designed to through different heights, to get varieties of view of forest landscape.

Strategy for area 3: The position here is almost the highest point in the whole design area, we are going to build a viewing platform to provide rest area and good views of both urban and nature landscape.

Strategy for area 4: Existing landscape here is main a leftover from quarry process. Quarry is also an industrial ruin, to combine natural element and quarry element.Meanwhile the location is next to the towns,we are going to restore vegetation to form a park not only for the tourists, but also for the local citizens.

Overall, first of all ,the strategy of structure are proposed, and then the strategy of function are proposed.

3.Project
In the manual process, we divide the project in four parts:
Area 1 - Quarry museum
Area 2 - Bridge through forest
Area 3 - Viewing platform
Area 4 - Restore park

In the Area 1 – Quarry museum, the strategy is characterized by the landscape of quarry landscape: To fully enjoy the quarry landscape the path is expanded on the top level of quarry. To fully enjoy the quarry landscape, the plank path is elevated on the middle level of quarry. To fully enjoy the quarry landscape, the museum is designed at the bottom level of quarry.

In the Area 2 – Bridge through forest, the strategy is characterized by the landscape levels: To enjoy the varieties of changing levels, the path is designed at the same level of ground. To enjoy the varieties of local trees, the path is designed at the same heights of trees. To enjoy the varieties of forest's view the bridge is designed on the top of trees.

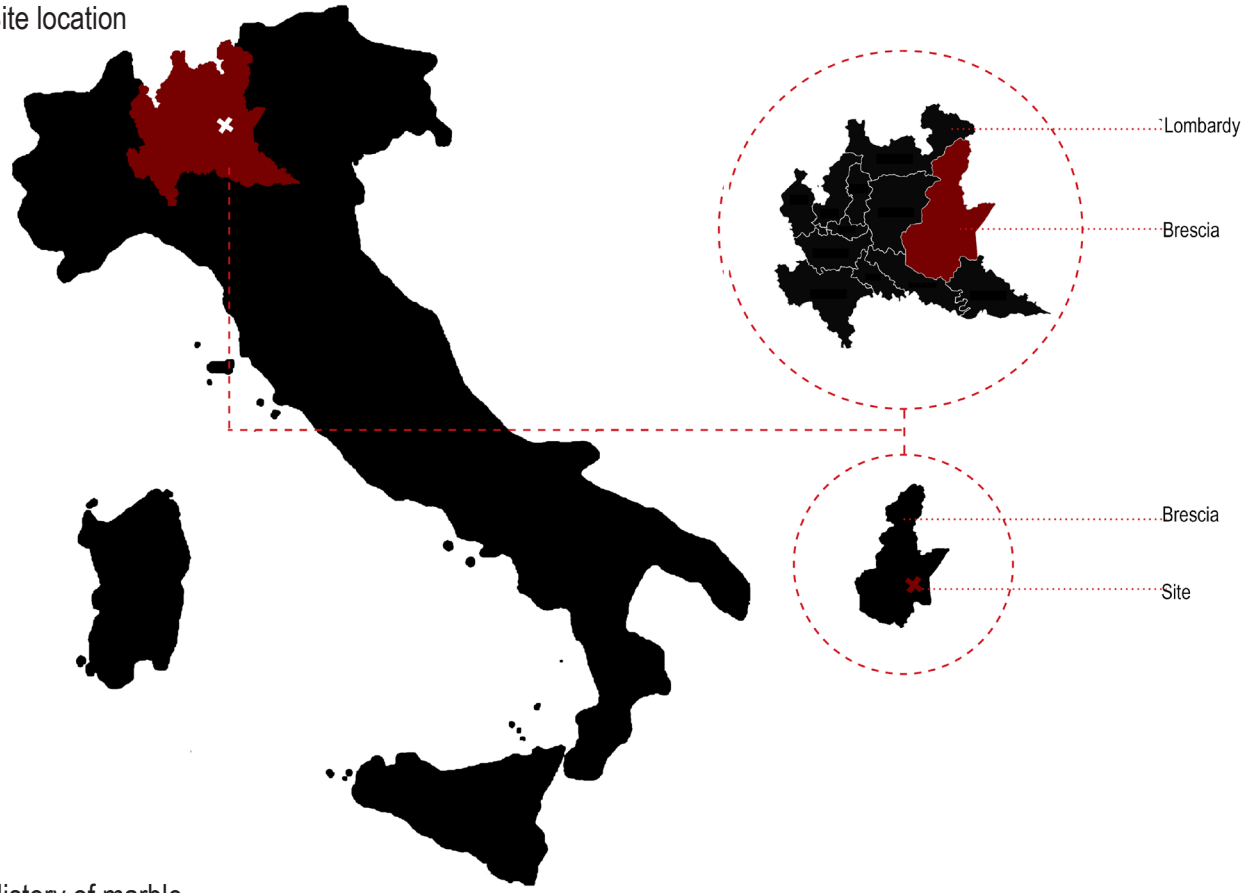
In the Area 3 – Viewing platform, upper platform construction is connected with flat ground. It is used to do sightseeing and take a rest. For the lower part of platform construction, we dig inside of the rock in order to allow visitors to touch the quarry and have a closer connection with the site. To rich the visiting experience of visitors, we set the stairs along the texture of quarry. Visitors could sit on 360 m-high mountains to let their feet off the ground and enjoy the scenery.

In the Area 4 – Restore park, the existing landscape here is a leftover form is quarry process, we propose six steps to restore the vegetation. Cleaning and shaping the bared ground, Setting the visiting route, Hydroseeding, Planting trees, consolidate plant communities, Gardening and constructing.

To sum up, the design project is consists of four area to bring new function: quarry museum, bridge through forest, viewing platform and restore park. And four area is connected by a design bicycle route, connecting with existing bicycle lanes.

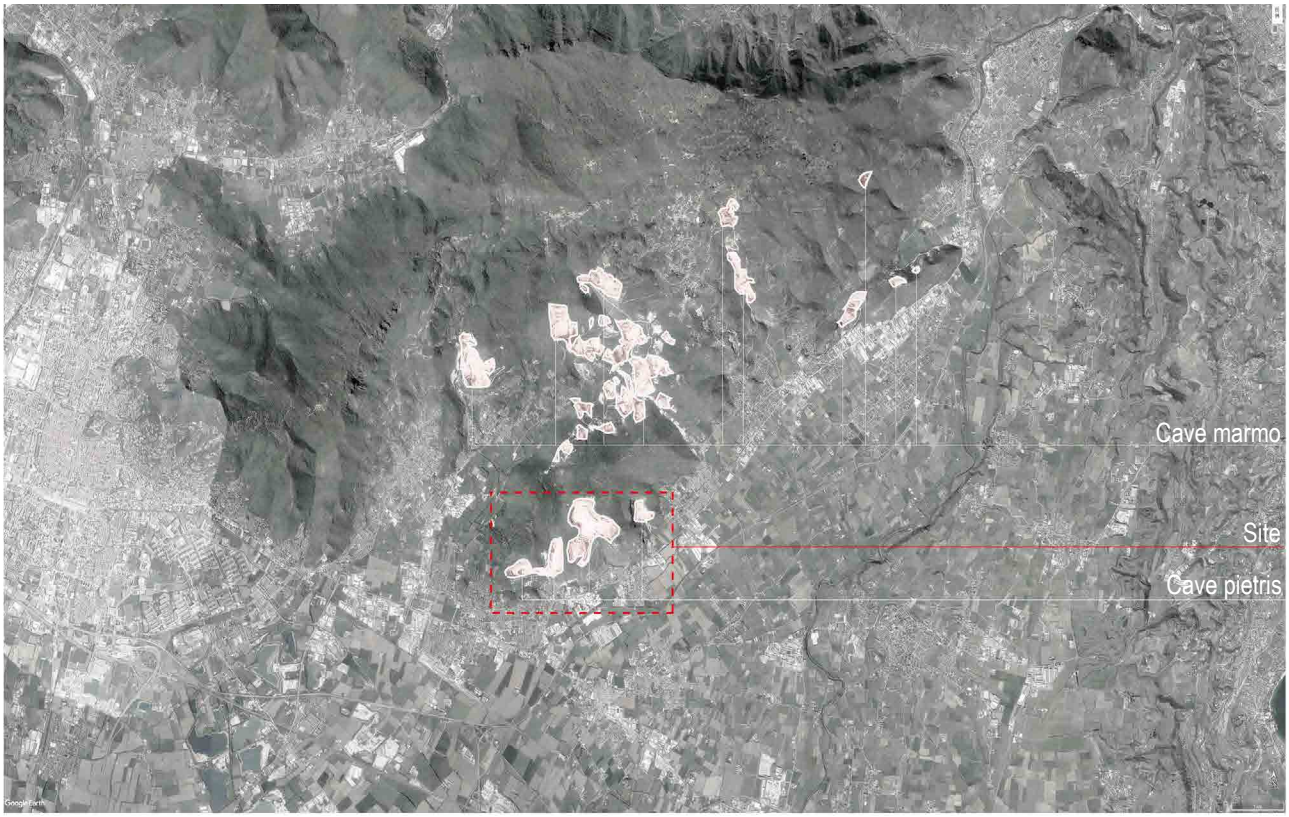
2 RESEARCH

Site location



History of marble

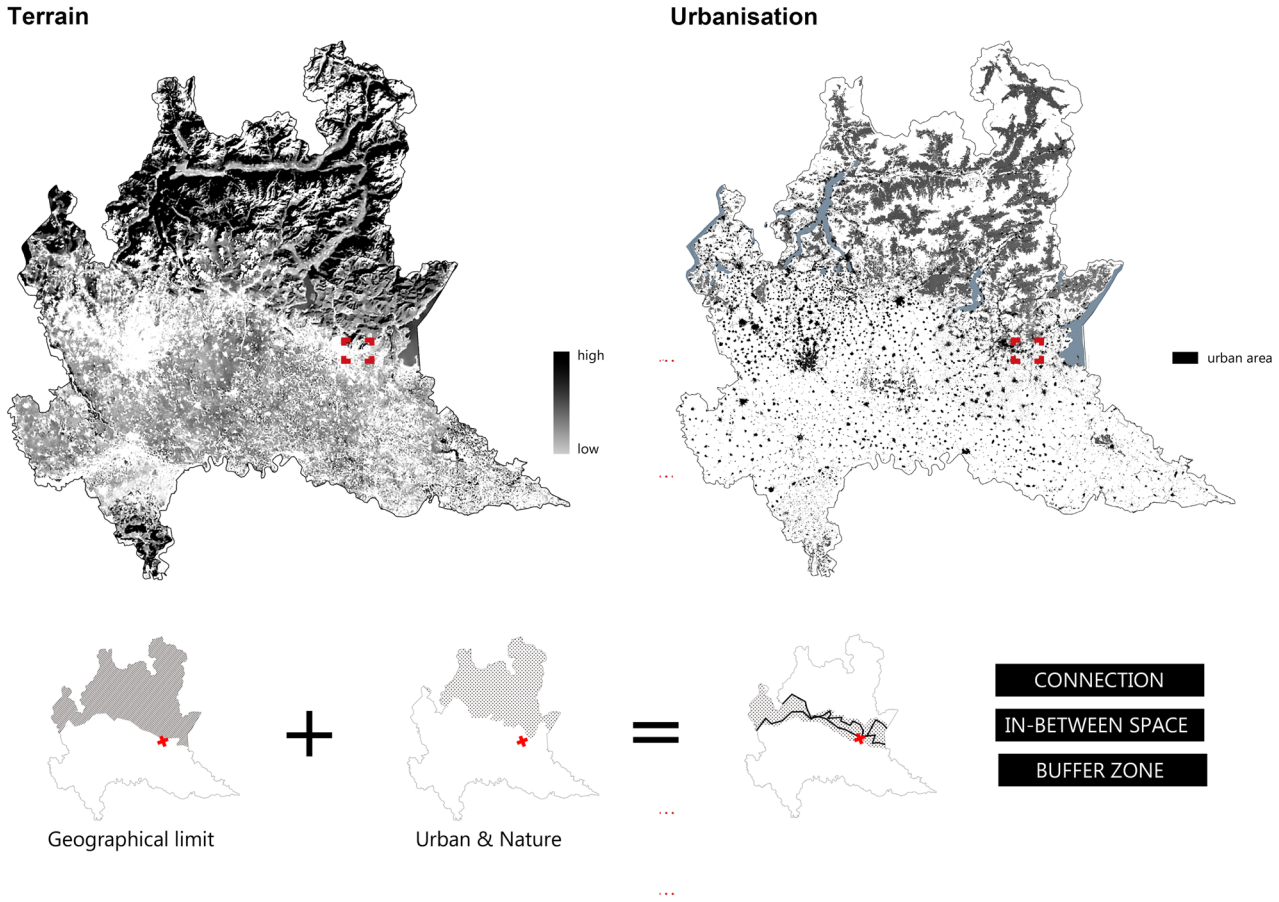
The Botticino Classico extraction basin has been used for over two thousand years. In Roman times the abundance of stone and marble in the Botticino area allowed for the development of a conspicuous epigraphic tradition, while the extraction and processing of marble brought an advancement in the technological level of the workshops, allowing for the first work organization of "industrial" type. The quarries were opened in the eastern back of the Trinity promontory, near which the extracted
marble blocks were deposited. The marble was then cut and transported to the shops or construction sites. Probably villages were built around the quarries for workers and their families. Botticino was used by local workshops as "material for artistic use" in public buildings in the city, along with imported marbles.
For some years now there has been a registered trademark that identifies the material coming from the classic area, the municipality of Botticino, promoted by the "Botticino Classico marble producer consortium", which includes all the growers of the classic area and the Municipality of Botticino.
The Brescia basin is the second most important in the excavation of ornamental stones from Italy, after that of Carrara.



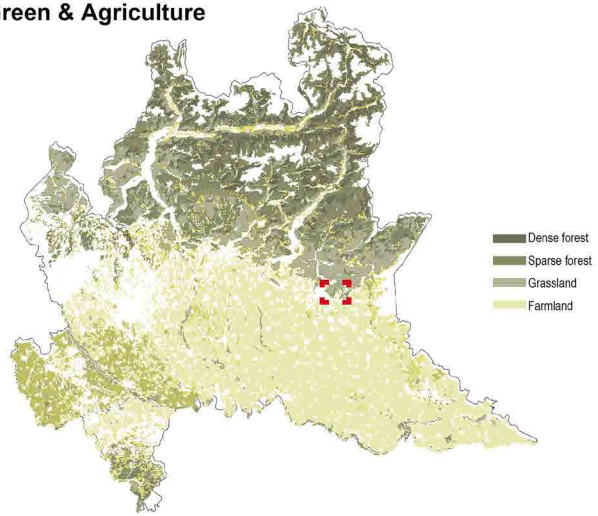
The site is in Rezzato, located in the city Brescia. It is known for the production of its quarry Marble. It Became the source of stone since 1950s, and for now it is abandoned.
The marble producted here now is widely used, it will be used in project . That is also a way to relfect the marble culture.

2.2 RESEARCH OF NETWORK RELATION

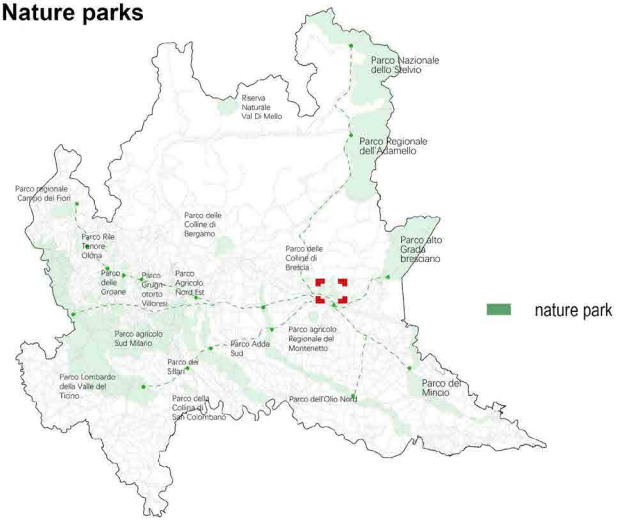
we studied the regional network relation of site in big scale of Lombardy to explore the potential of the site. For example, from the terrain and the urbanization, the site is located in the north with many mountains and few cities, the south is flat and multi-city. In terms of traffic connections, the site is connected to many high-speed bicycle lanes, and the traffic is convenient. In terms of attraction, the venue may become the connection point between many UNESCO and nature parks.



Green & Agriculture



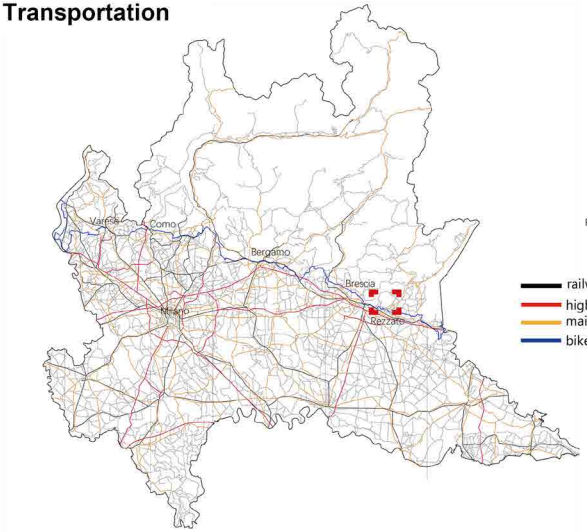
Nature parks



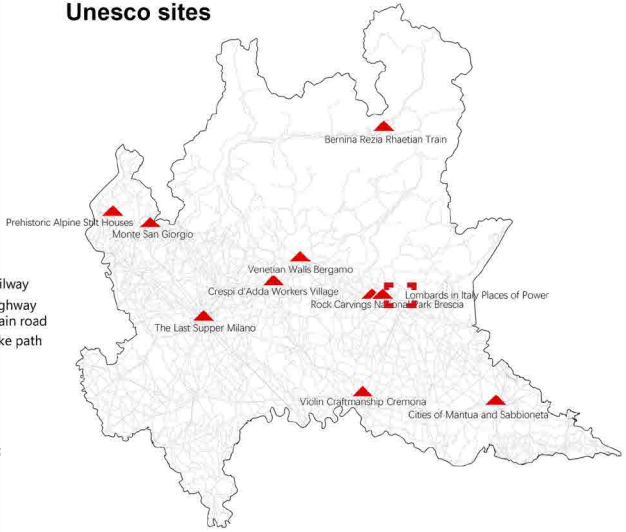
Green area limit

Park connection

Transportation

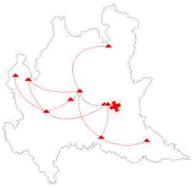


Unesco sites



transportation density

+



Attraction connection

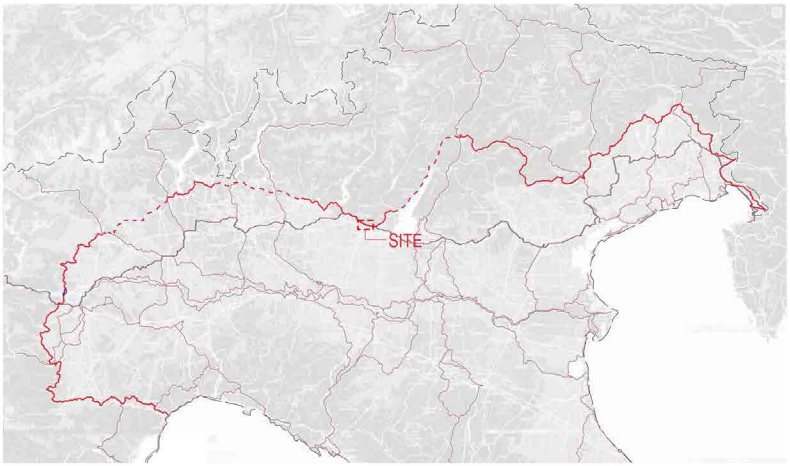
=

LOOP

2.3 BICYCLE COLLECTION

Among all those relationships, bicycle lanes are most connected and have potential to extend. Tourists will easy to bring in by these lanes. There are 5 official suggestion itineraries which are related to site are founded.

BI12 - Ciclovia Pedemontana Alpina



These two route across the north of Italy, will spent several days for a complete journey. Our site can be a stop point for the tourists if we design the function of accommodation.

BI20 - Ciclovia Aida

Rezzato - Botticino - Brescia

30.1 km cycle path

Crossing 5 towns

1 day trip

Rezzato - Gavardo - Serle - Botticino

34.3 km cycle path

Crossing 8 towns

1 day trip

Rezzato - Gavardo - Salo - Lonato

47.7 km cycle path

Crossing 9 towns

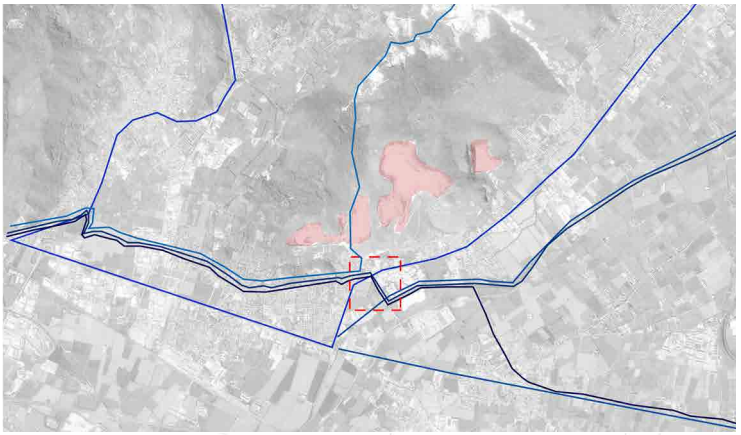
1 day trip

The bike lane users in the region are all local people, which is a way to attract local tourists. If we connect that, we can connect the whole bicycle system in Brescia.

3 STRATEGY

STRATEGY 1: Strengthening connections and bring in tourists.

1.Studying relationship between existing bike route and site.



Legend
National bicycle route 1
National bicycle route 2
Regional bicycle route 1
Regional bicycle route 2
Regional bicycle route 3
Site area
Intersection of tourists

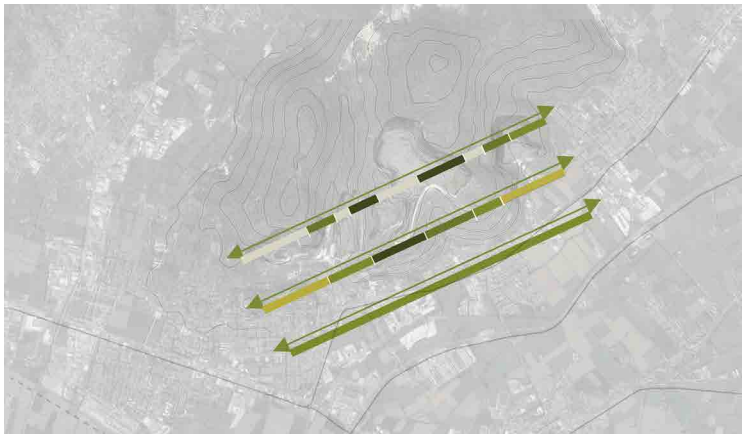
2.Creating new tourist path through all site area.

Legend
Connection of site area
Site area

3.Connecting new route and extend existing route.

Legend
Existing bicycle route
New bicycle route
Connection point
Site area

STRATEGY 2: Experimenting new relation between tourists route and landscape.

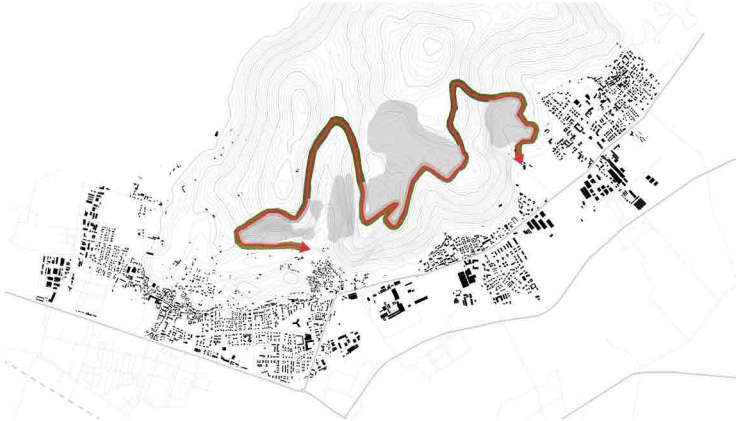


Legend
Dense forest
Sparse forest
Grass space
Farm land
Quarry area

1.Studing existing landscape

Legend
New connection
Dense forest
Sparse forest
Grass space
Farm land
Quarry area

2.Connecting existing landscape

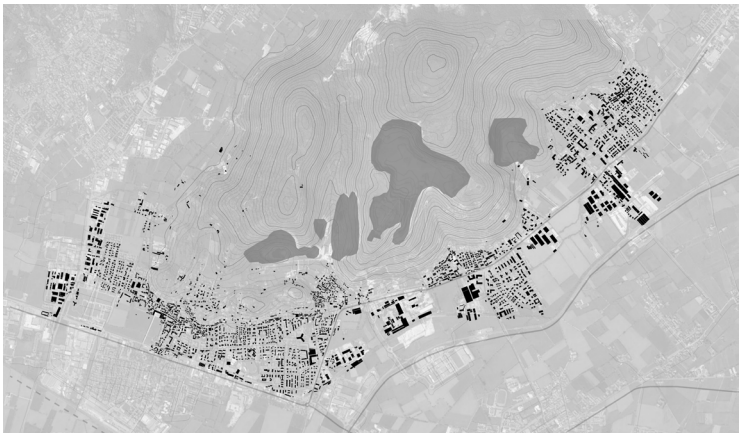


Legend
New route
Dense forest
Sparse forest
Grass space
Farm land
Quarry area

3.Deciding new route, making more landscape changes on both sides.

STRATEGY 3: Selecting nodes be related to route

1.Studing existing attraction, site area is lacking attraction.



Legend
Quarry area
Build-up area

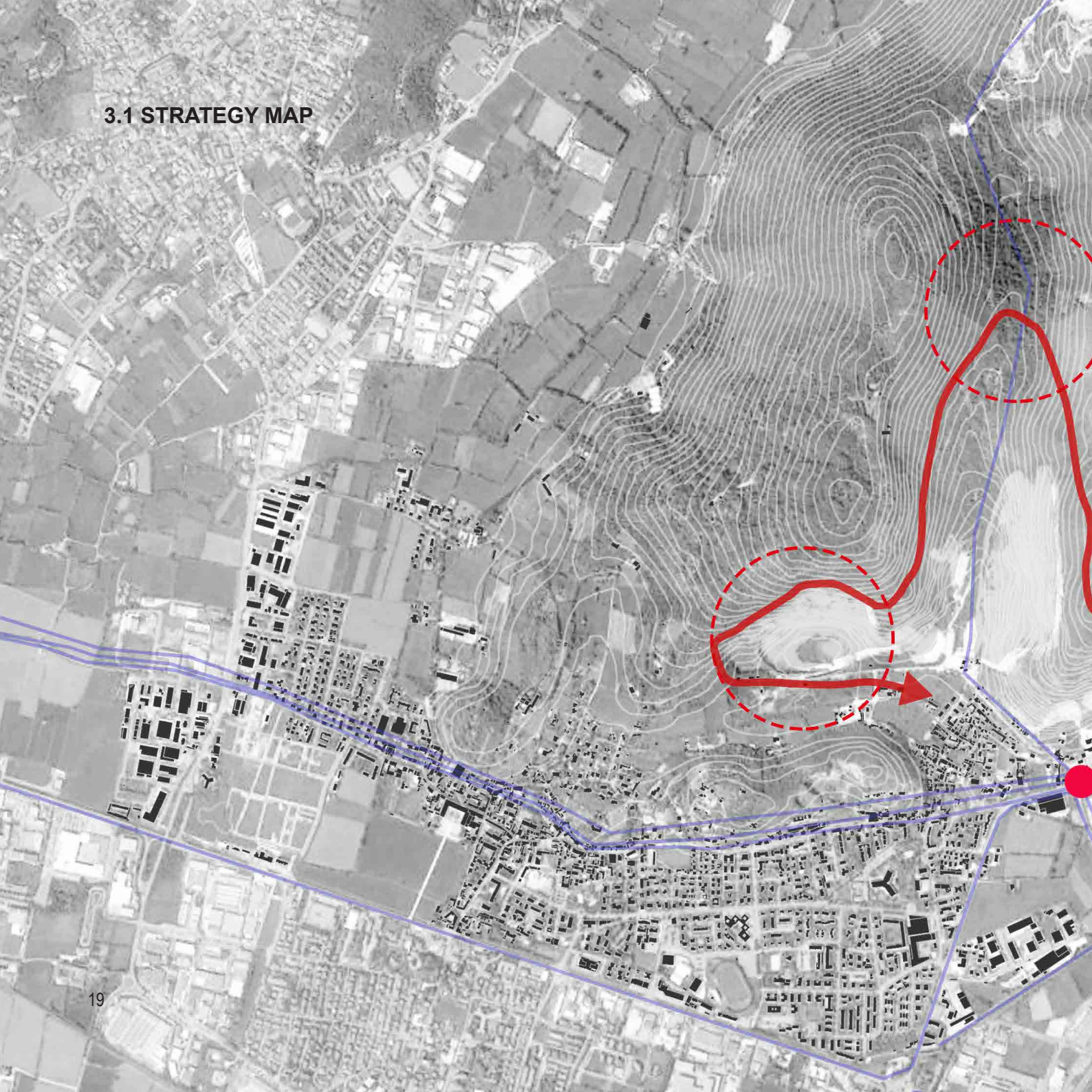
2.Place nodes on average distances to keep visitors interested.

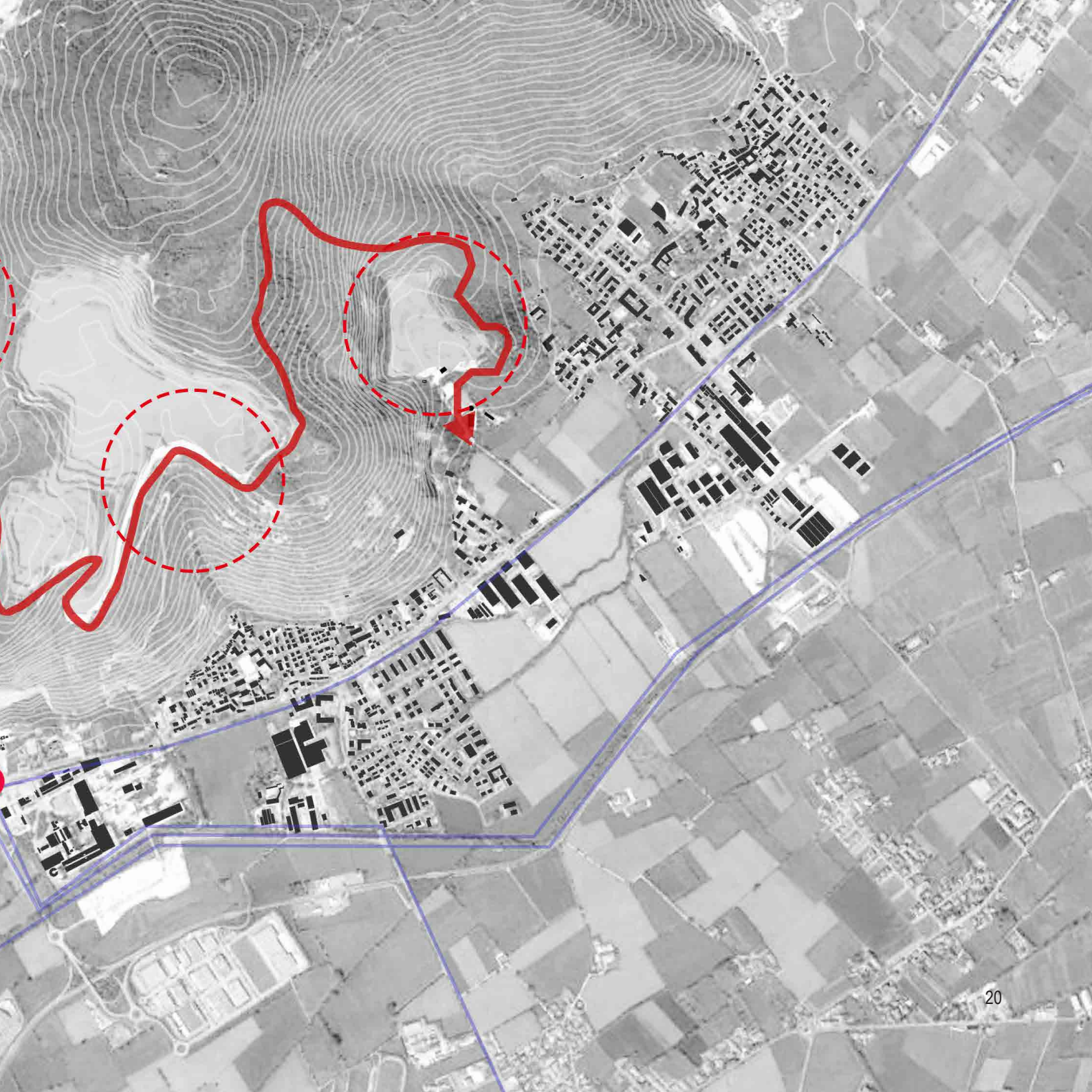
Legend
Equal distance
Node

3.Put nodes in design route.

Legend
Design route
Node

3.1 STRATEGY MAP

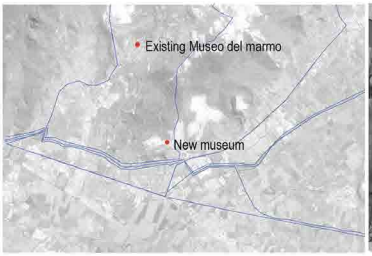




3.2 Strategy of function

Strategy for area 1:

There is a long history of mining marble in this area since 1950s ,quarry have important influences for local residents,abandoned quarry can be looks like heritage. Due to the existing marble museum in brescia is in bad accessibility, so we propose to design a new museum to promote marble culture.Put it in the start area also can attract tourists.



Strategy for area 2:

To enjoy the varieties of changing levels of landscape in forest, a bridge is designed to through different heights, to get varieties of view of forest landscape.

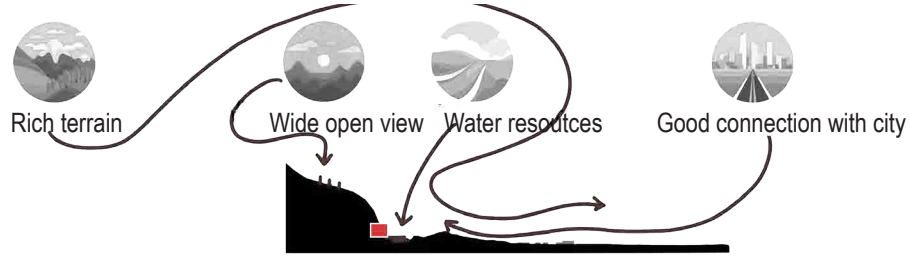
Strategy for area 3:

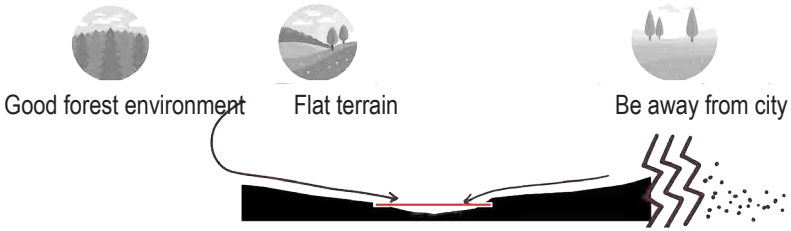
The position here is almost the highest point in the whole design area ,we are going to build a viewing platform to provide rest area and great views of both urban and nature landscape.

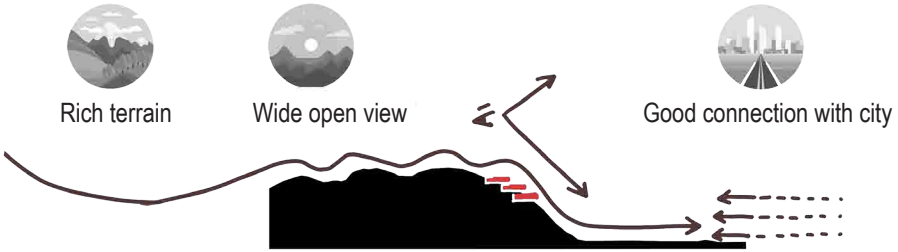
Strategy for area 4:

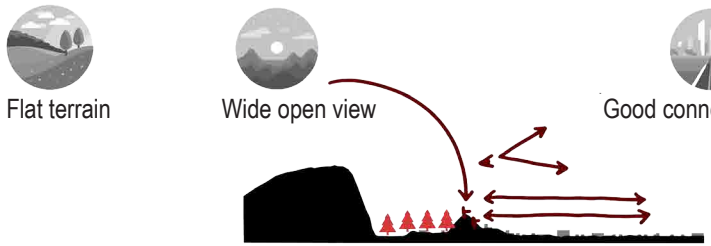
Exsiting landscape here is main a leftover from quarry process. Quarry is also a industial ruins, to combine natural element and quarry element ,wo are going to restore the vegetation, to form a park providing rich tour experience.

FEATURE OF AREA









MUSEUM

Record history,promote culture

Attract tourists

VIEWING PLATFORM

Connect different height

Provide rich tour experience

FOREST BRIDGE

Provide a resting place

Enjoy the view of urban & nature

RESTORATION PARK

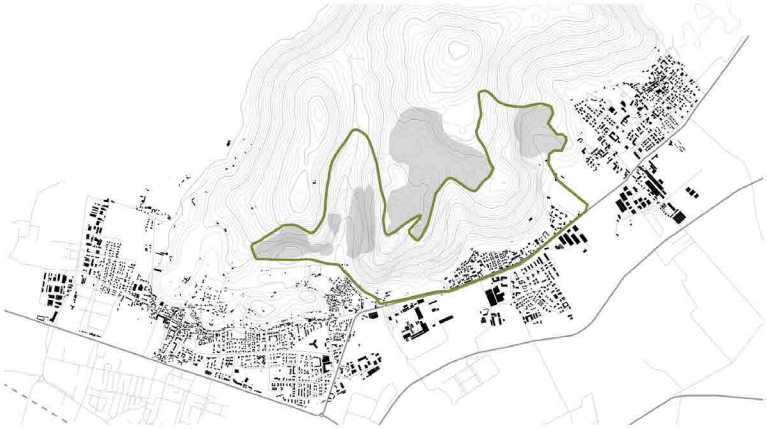
Connect different height

Provide rich tour experience

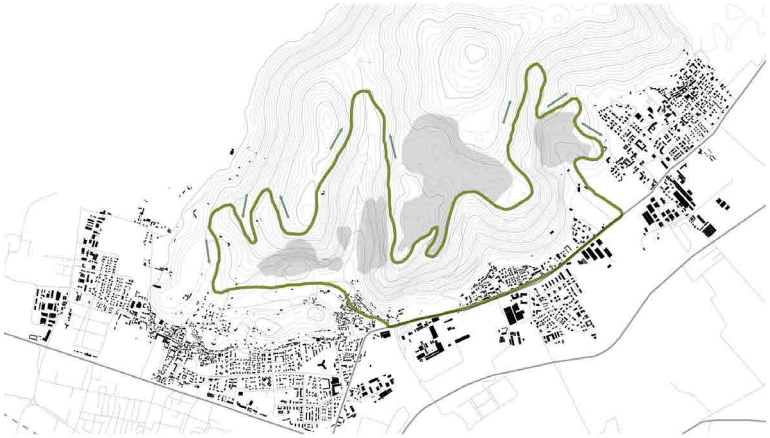
3.3 MASTER PLAN


AREA 4
AREA 3
ROUTE STARTING POINT

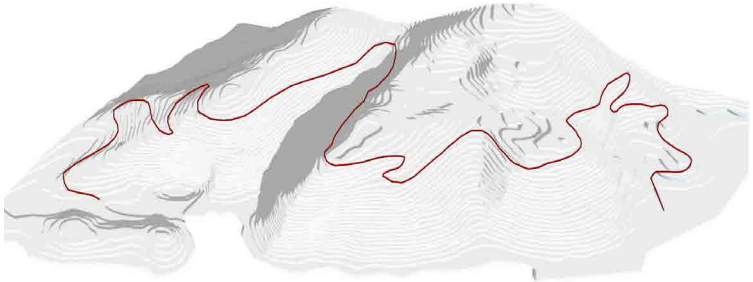
ADJUSTMENT OF ROUTE



Connection to existing road.



Adjusting the slope on average ratio 10%



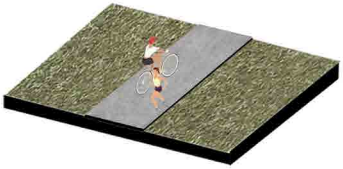
Birdview of route

METHOD OF ROUTE

Before

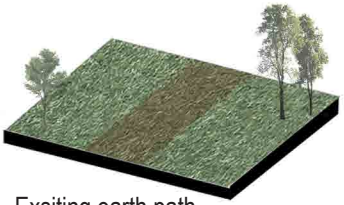
After

1 Exsiting earth path



Strengthen the road

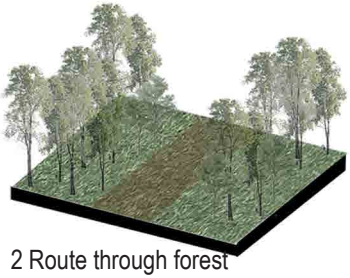
Set rest space



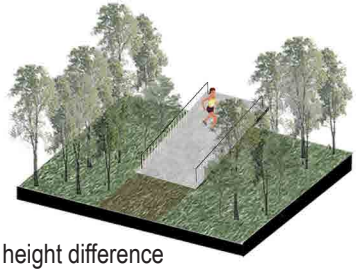
Exsiting earth path

Steel mesh path

Stairs



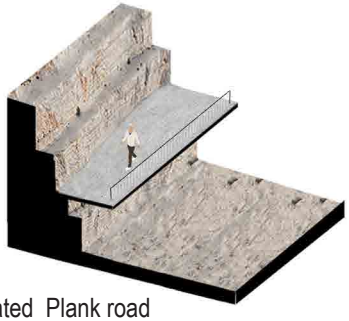
2 Route through forest



Set height difference

Elevated Bridge

3 Route through quarry



Elevated Plank road

Ecological restoration

4 PROJECT

There is a long history of mining marble in this area since 1950s, quarry have important influences for local residents, abandoned quarry can be looks like heritage. Due to the existing marble museum in Brescia is in bad accessibility, so we propose to design a new museum.

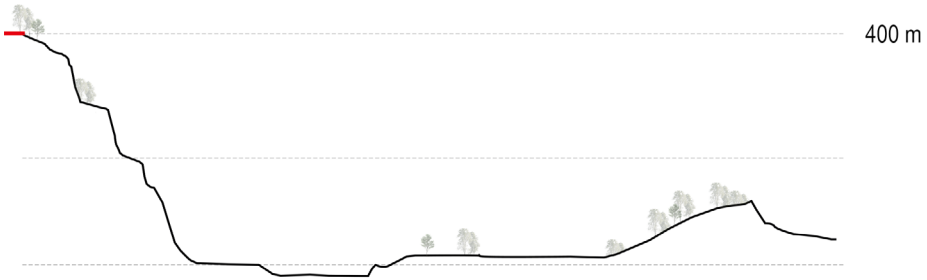
The museum we propose give it a new form includes exhibition function and accommodation function, because there are two Italian national bicycle routes in about 3 days, and our place can be their stopping point.

Combining the exhibition with accommodation, the rest is the person watching the exhibition, and the living environment is the exhibition environment, which is more conducive to the promotion of marble culture.

4.1 QUARRY MUSEUM

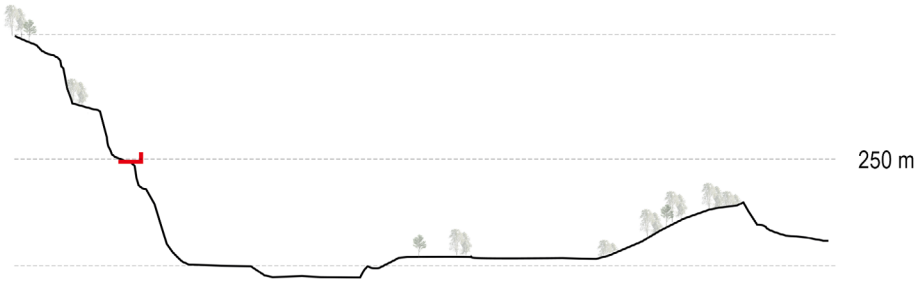
AREA 1 - QUARRY MUSEUM 1: 2000


250 m
3
150 m
2
140 m
1
150 m
160 m
Legend
Existing road
Existing building
Design bicycle route
Design walk path
1. Entrance building
2. Marble steps
3. Museum with accommodation
4. Marble boardwalk



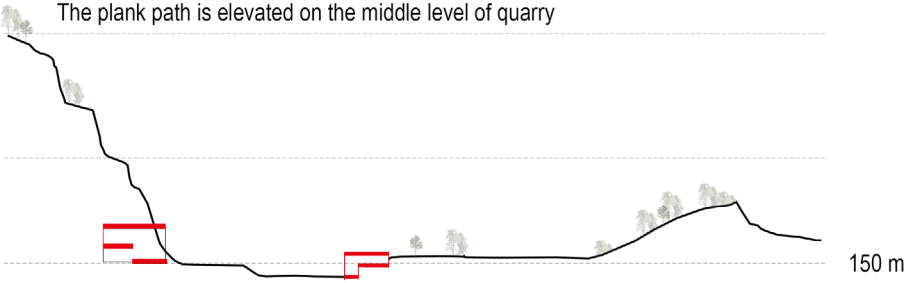
To fully enjoy the quarry landscape

The path is expanded on the top level of quarry



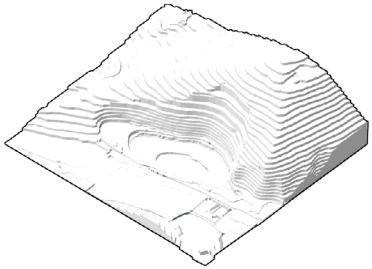
To fully enjoy the quarry landscape

The plank path is elevated on the middle level of quarry

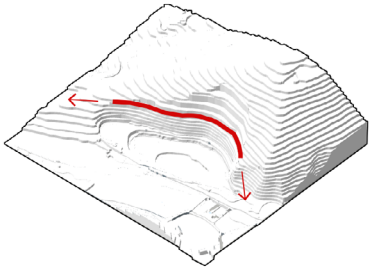


To fully enjoy the quarry landscape

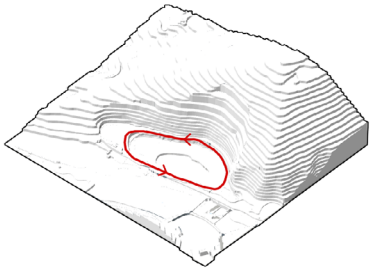
The buildings is designed at the bottom level of quarry



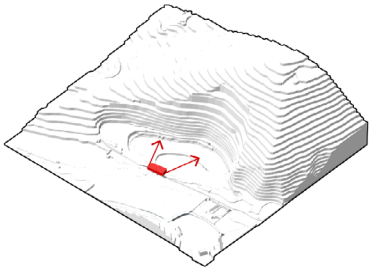
1.Existing topography



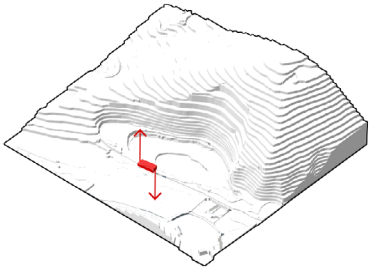
2.Elevating path on the middle of the quarry.



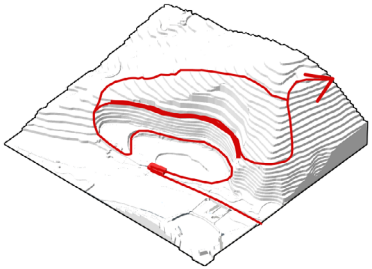
3.Creating a ring path around the quarry.



4.Creating a exhibition hall to be the entrance building.

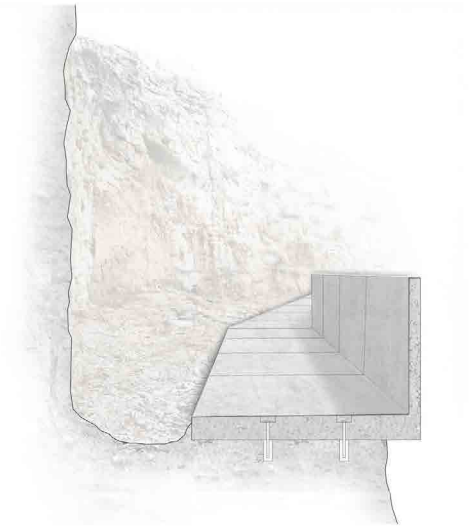


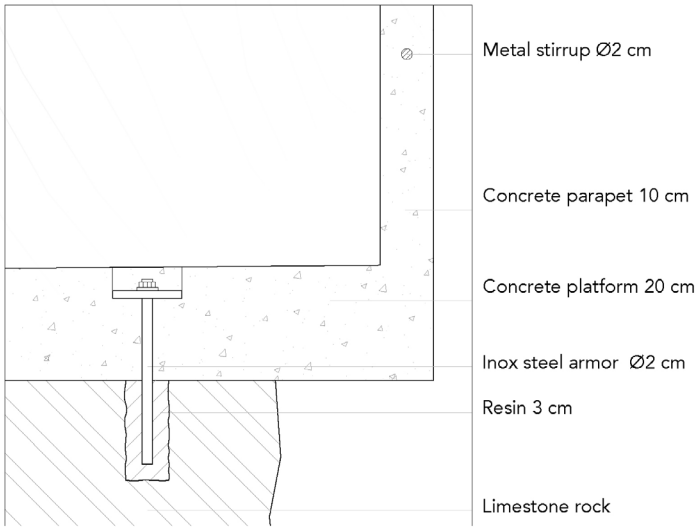
5.Push the down exit to fit expansion path in different hight.



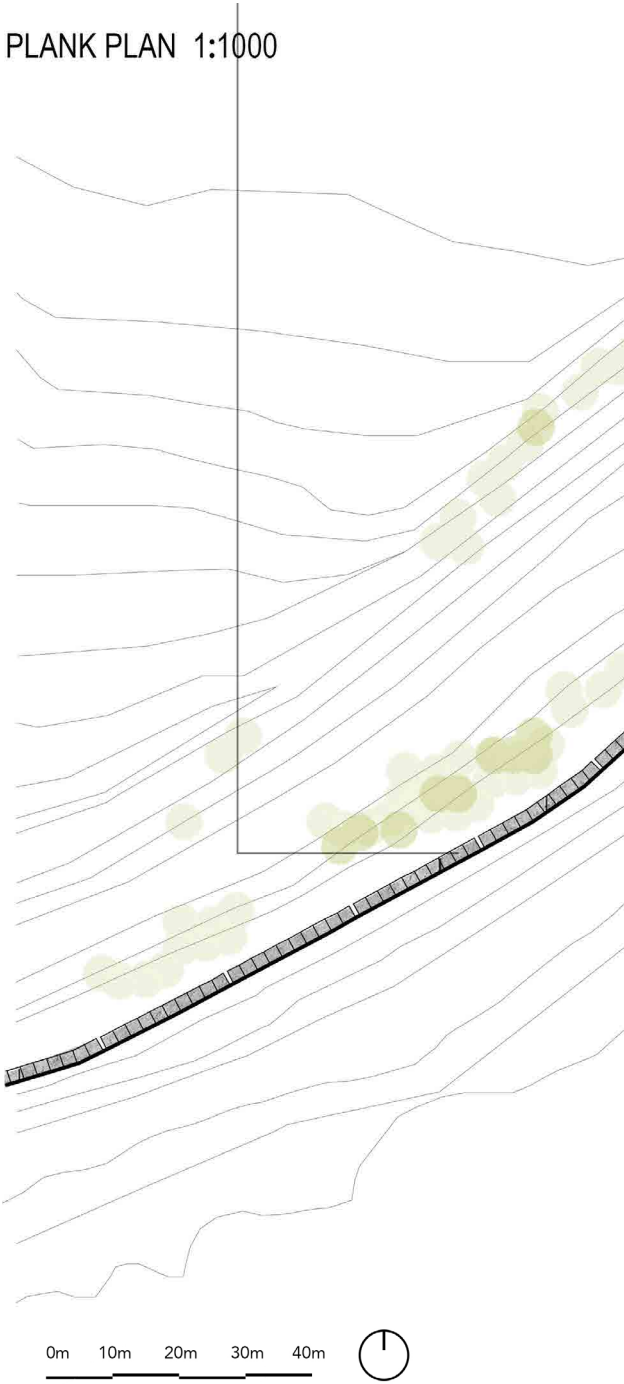
6.Connecting all the part to bicycle path.

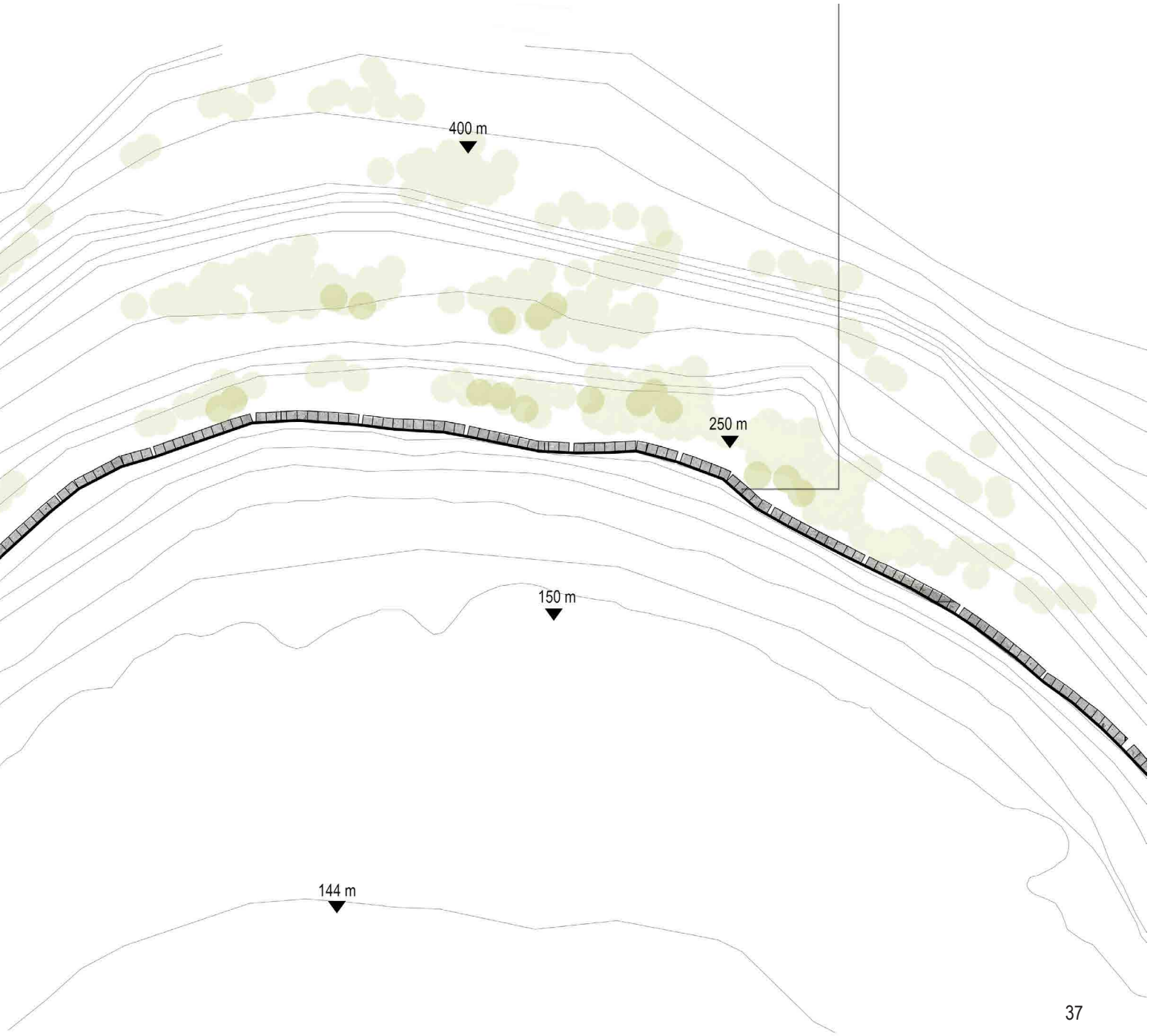
DETAILS

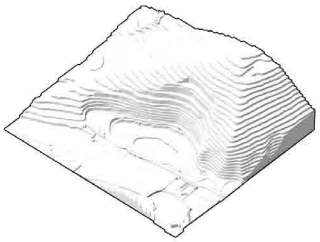




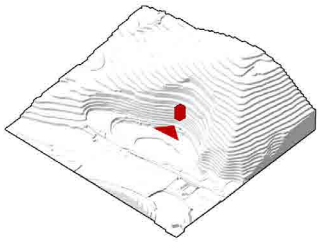
PLANK PLAN 1:1000



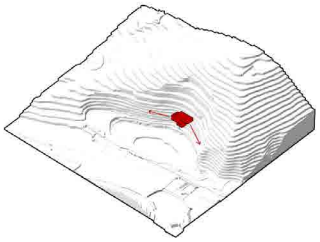

400 m
250 m
150 m
144 m



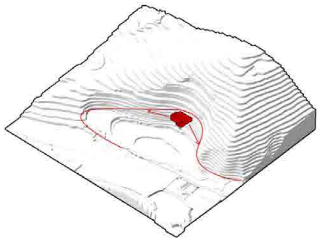
1.Existing topography



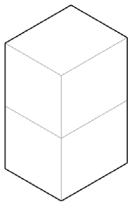
2. Selecting the suitable position to insert building



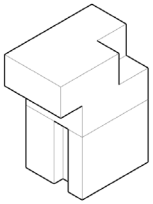
3. Shaping the building with topography



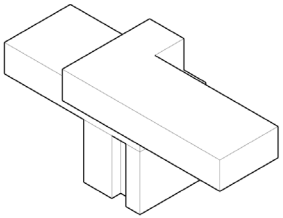
4. Connecting building with environment



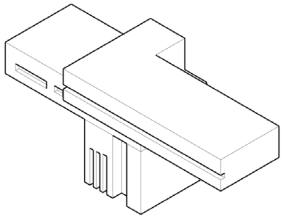
1. Separating different functions



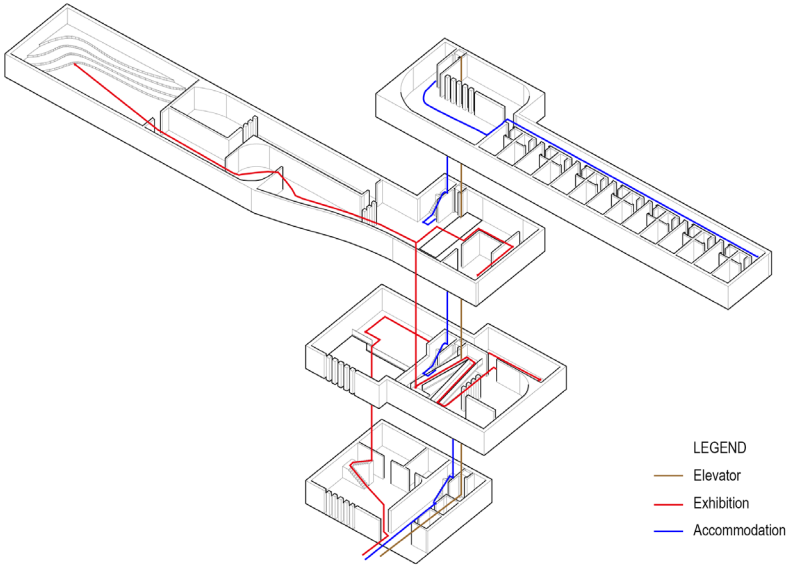
2. Push and pull in quarry mountain



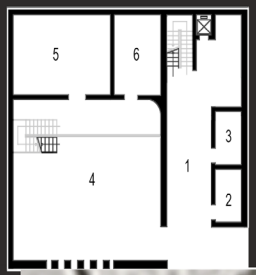
3. Extending the volume according to topography



4.Creating the opening of buildings

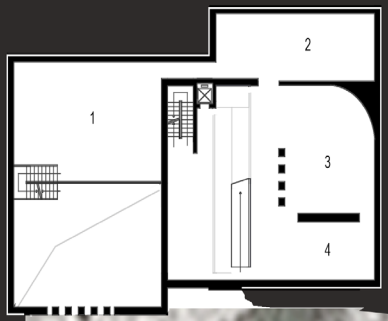


FIRST PLAN 1:300



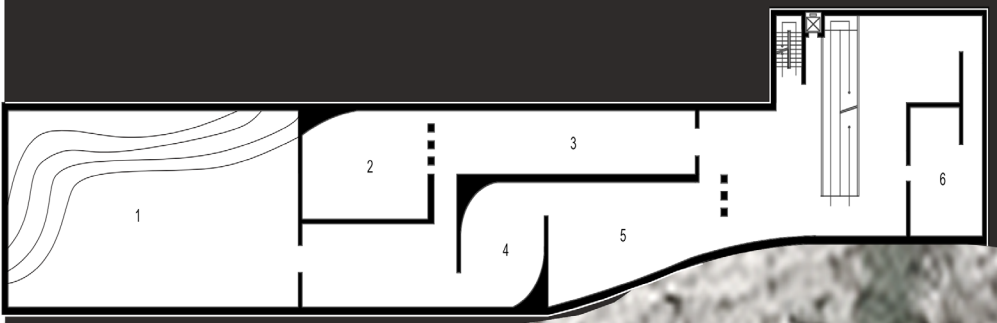
1. Entrance hall
2. Reception
3. Bar & souvenir
4. Exhibition
5. Office
6. Storage

SECOND PLAN 1:300



1. Exhibition A
2. Exhibition B
3. Temporary exhibation&
4. Event venue

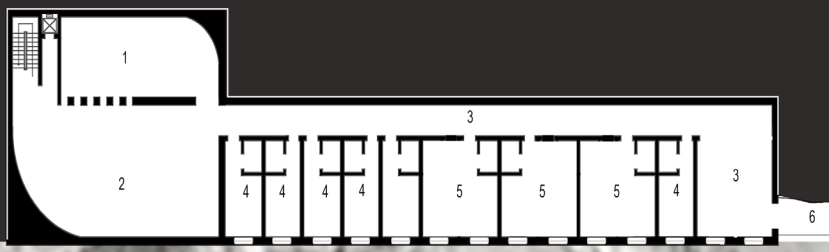
THIRD PLAN 1:300



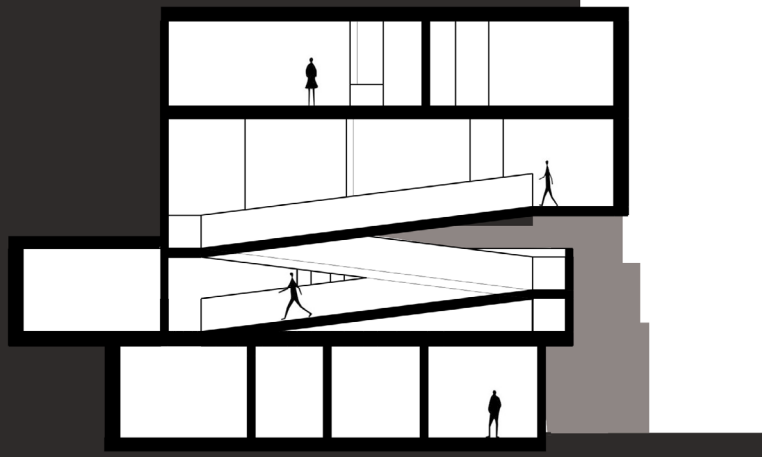
1. Meida room
2. Exhibition A
3. Exhibition B
4. Exhibition C
5. Exhibition D
6. Rest room

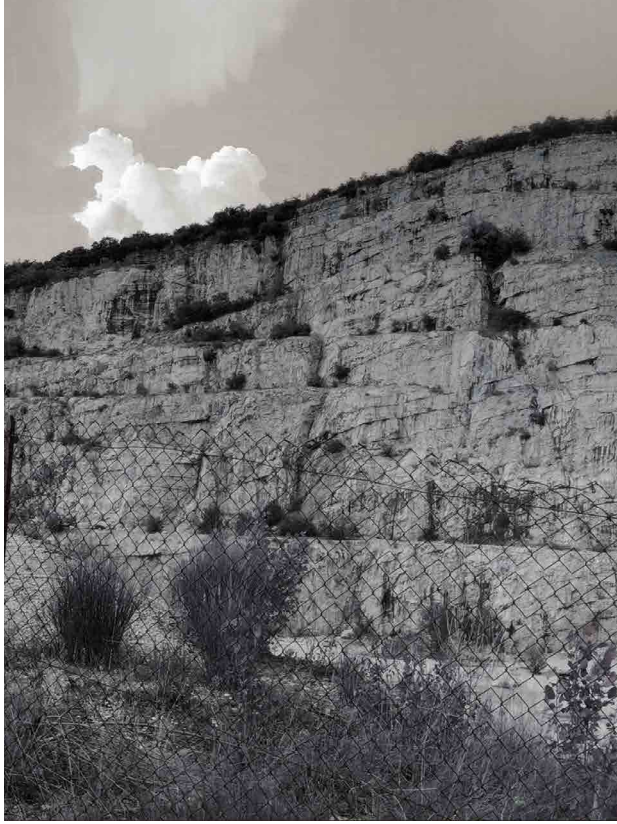
FORTH PLAN 1:300

1. Service center & Restaurant
2. Exhibition
3. Gallary corridor
4. Single accommodation
5. Double accommodation
6. Marble landscape

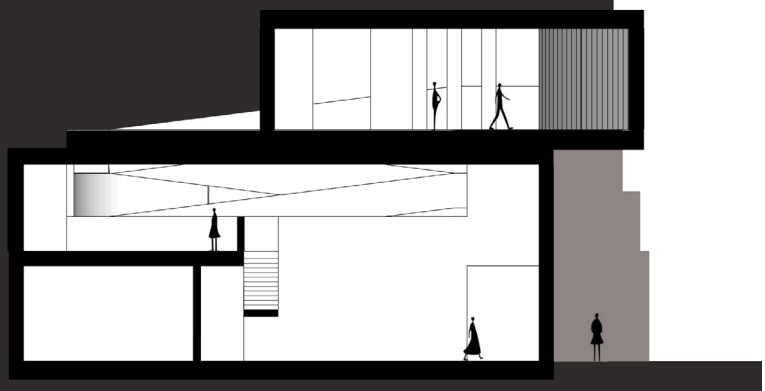


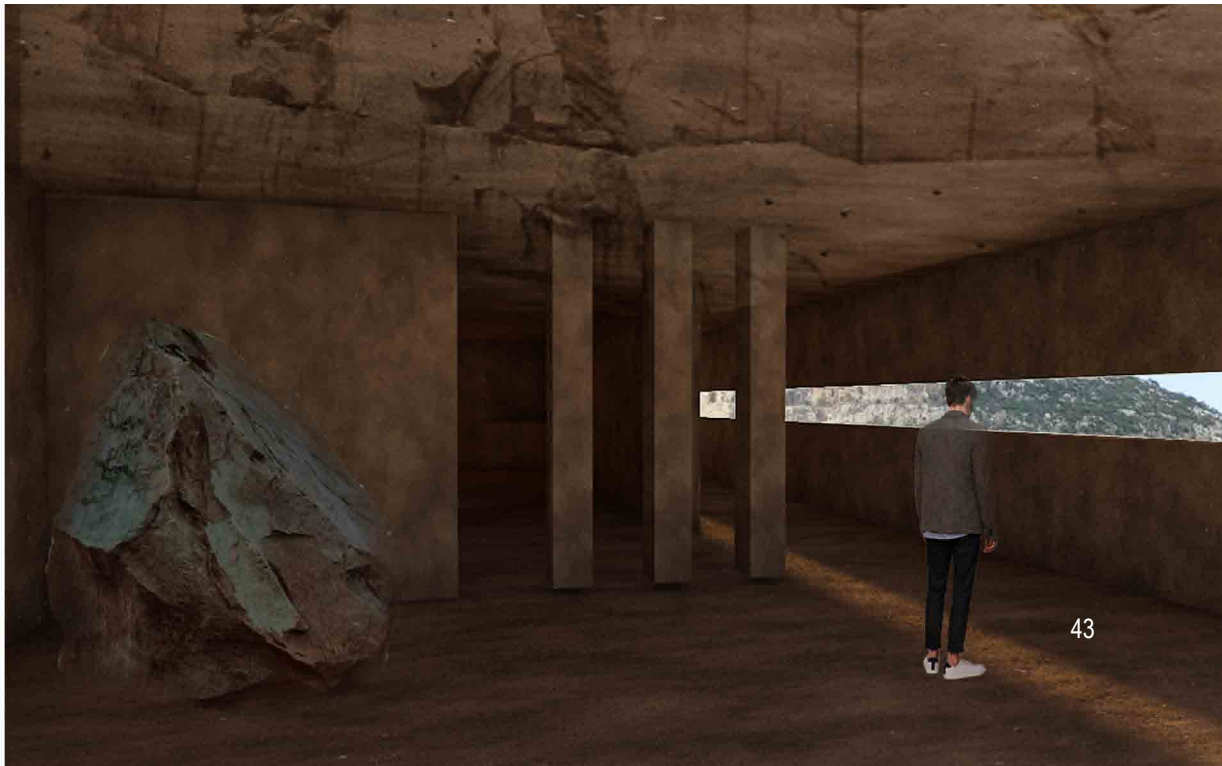
SECTION 1-1 1:150





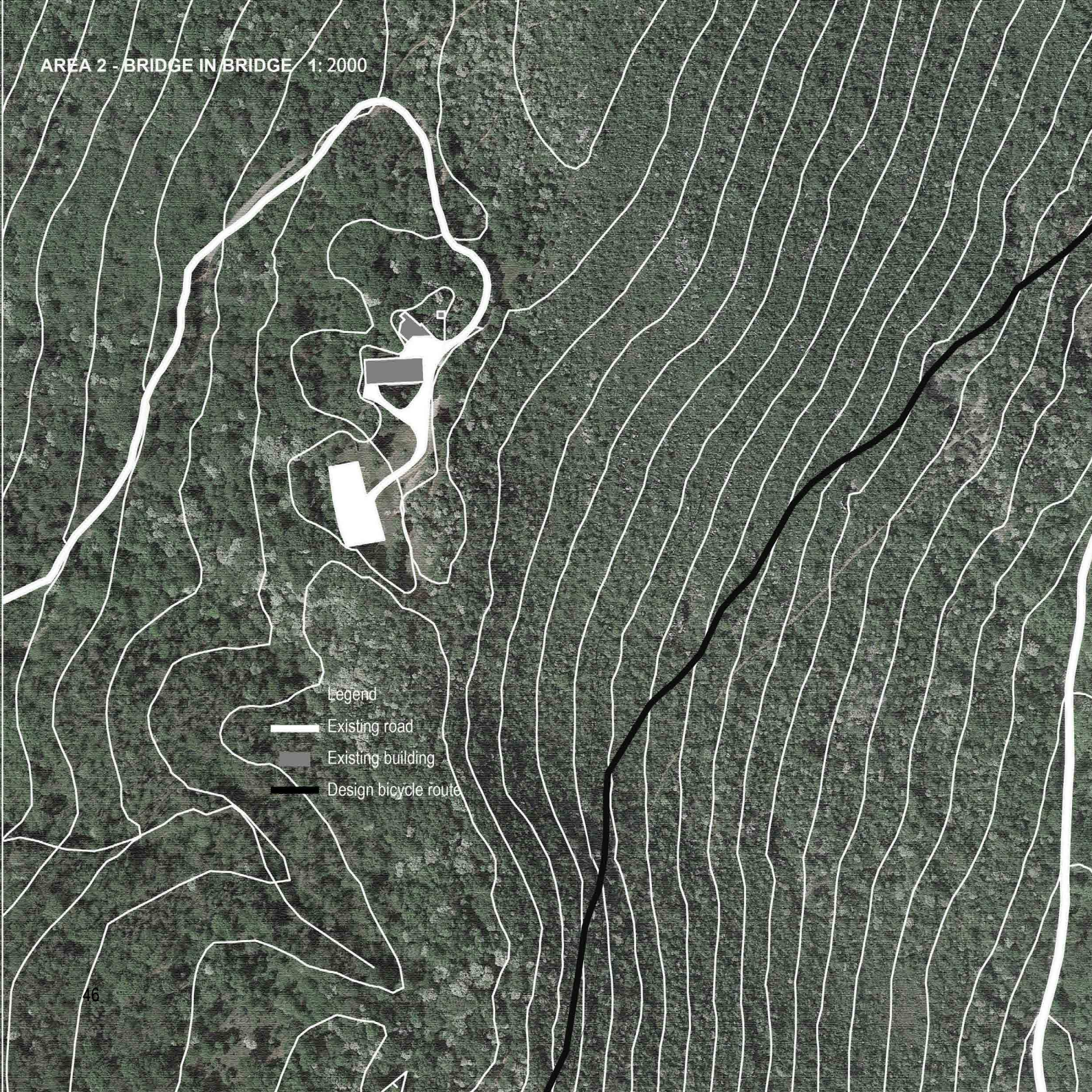
SECTION 2-2 1:150



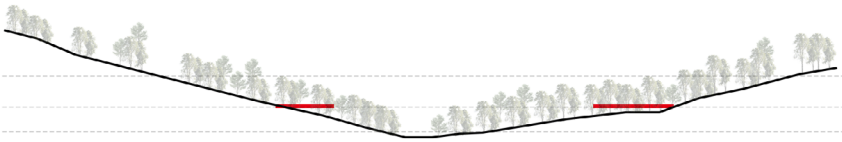


To enjoy the varieties of changing levels of landscape in forest, a bridge is designed to through different heights, to get varieties of view of forest landscape.

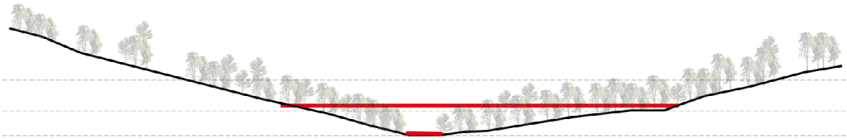
4.2 BRIDGE IN FOREST


AREA 2 - BRIDGE IN BRIDGE 1: 2000
Legend
Existing road
Existing building
Design bicycle route

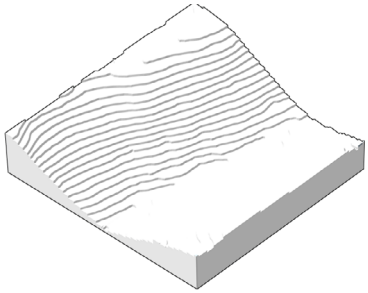
To enjoy the varieties of changing levels
the path is designed at the same level of ground



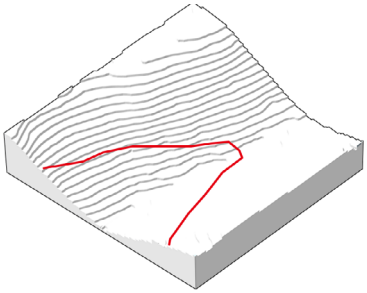
To enjoy the varieties of local trees
the path is designed at the same heights of trees



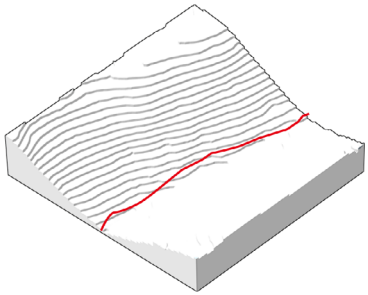
To enjoy the varieties of forest view
the bridge is designed on the top of trees



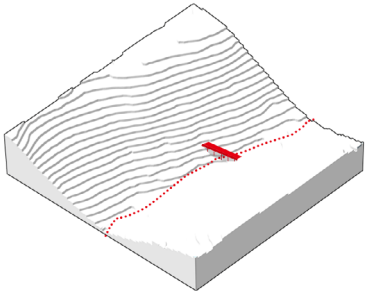
1.Existing topography



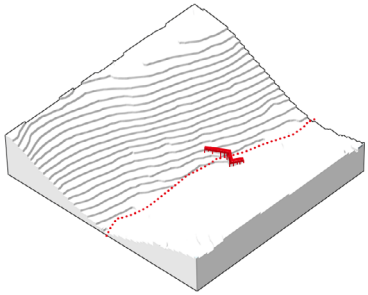
2.Creating path through forest.



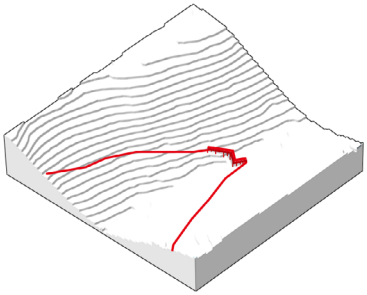
3.Avoiding the existing car route.



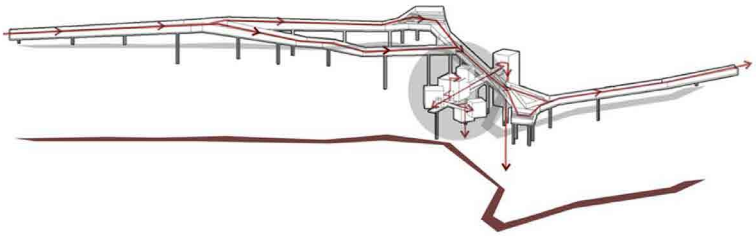
3.Elevating the bridge cross the existing car route.

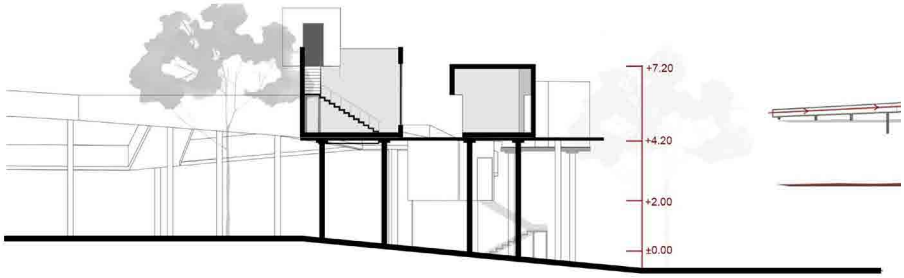


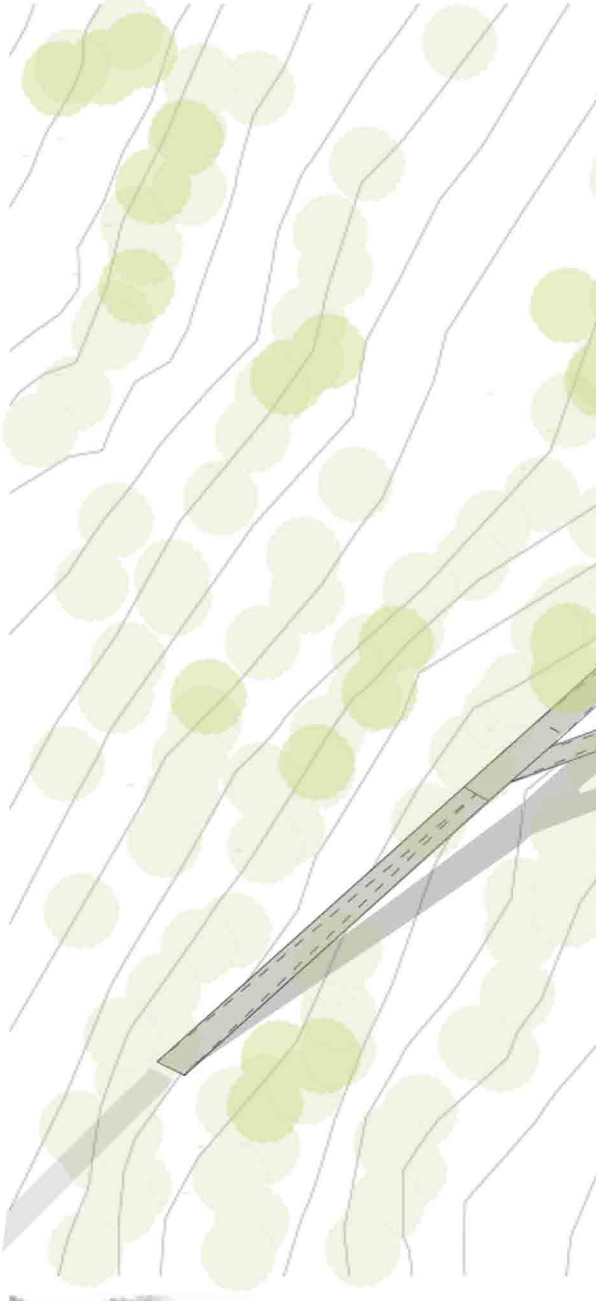
5.Adjusting the angle to adapt to the terrain, to have more views.

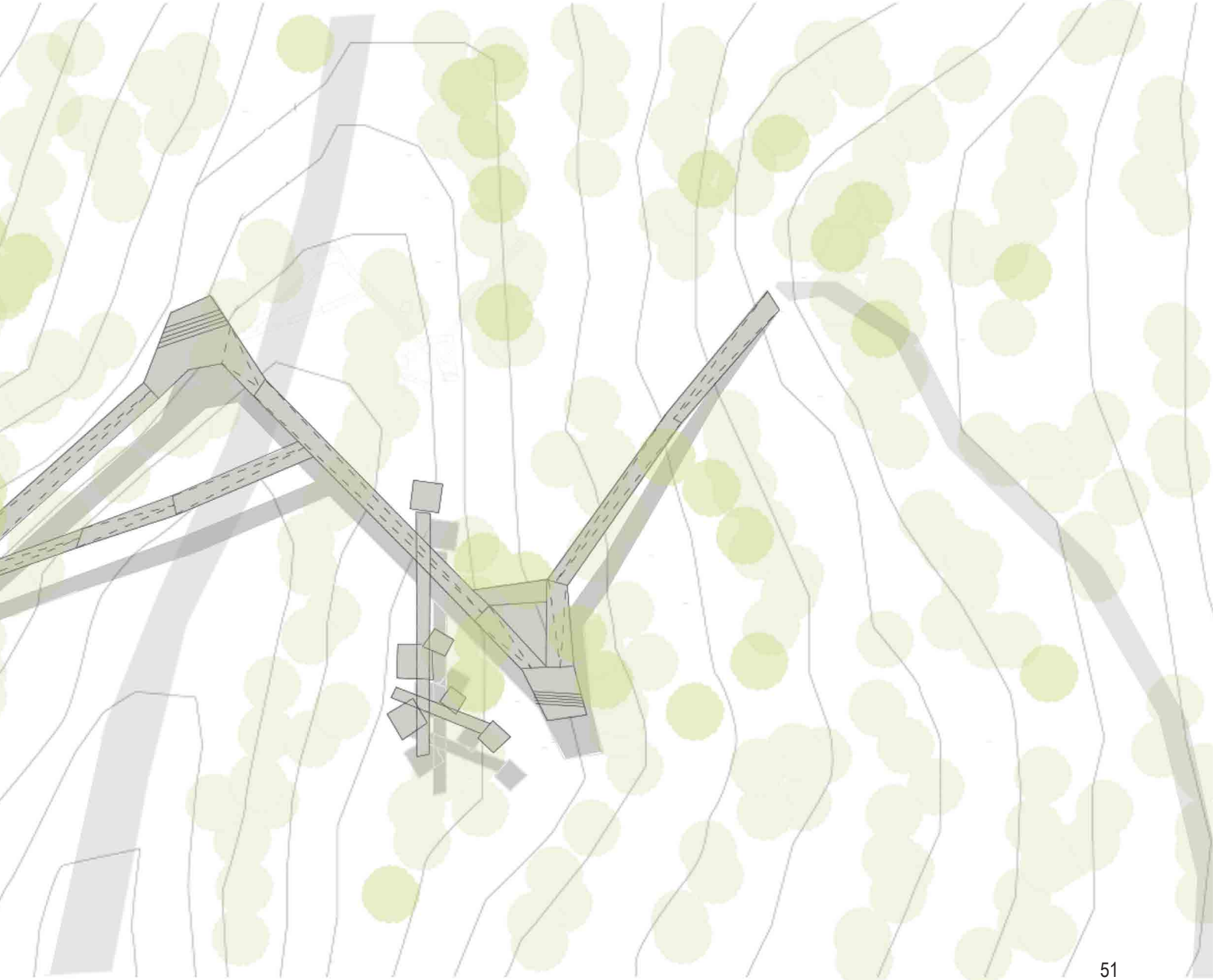


6.Connecting the design path to bridge.




+7.20
+4.20
+2.00
±0.00



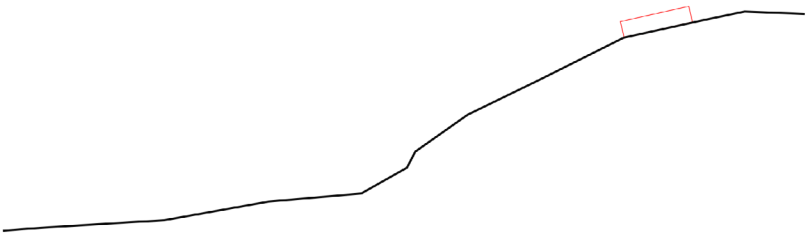


4.3 VIEWING PLATFORM

The position here is almost the highest point in the whole design area, we are going to build a viewing platform to provide rest area and good views of both urban and nature landscape.

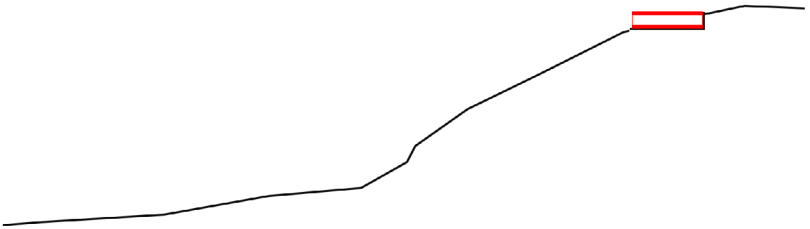

AREA 3 - VIEWING PLATFORM 1: 2000


57
0m
50m
100m
150m

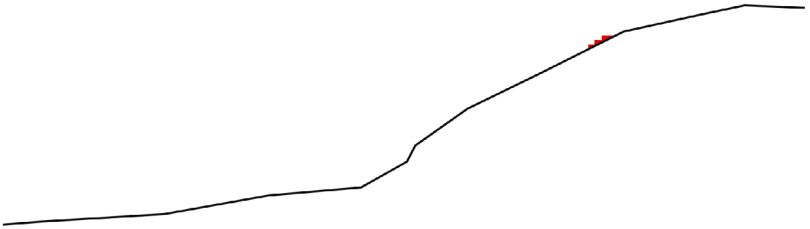


Upper platform construction is connected with flat ground.

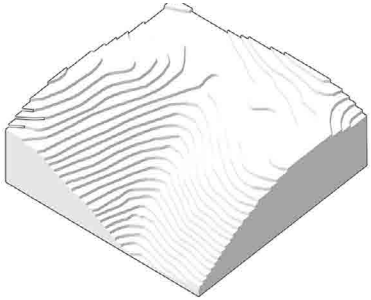
It is used to do sightseeing and take a rest.



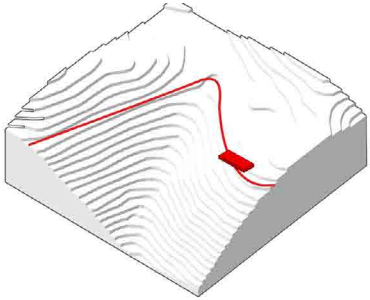
For the lower part of platform construction, we dig inside of the rock in order to allow visitors to touch the quarry and have a closer connection with the site.



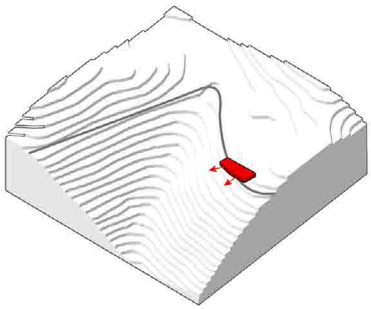
To rich the visiting experience of visitors, we set the stairs along the texture of quarry. Visitors could sit on 360 m-high mountain to let their feet off the ground and enjoy the scenery..



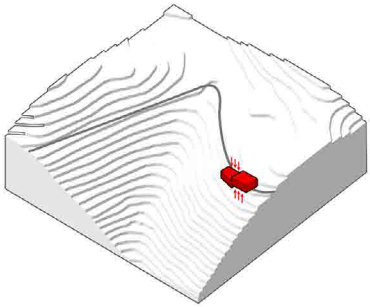
1.Existing topgraphy



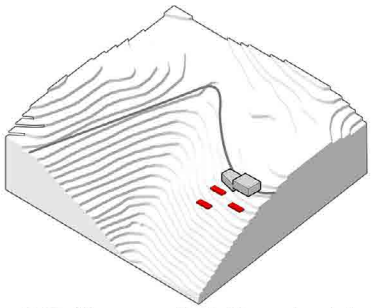
2.Connecting the path and placing platform



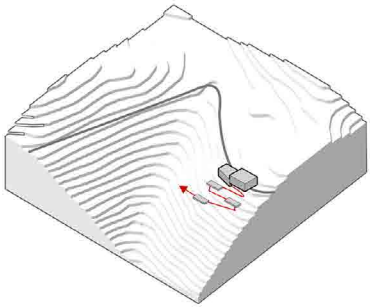
3.Twisting the platform according to the view and terrain.



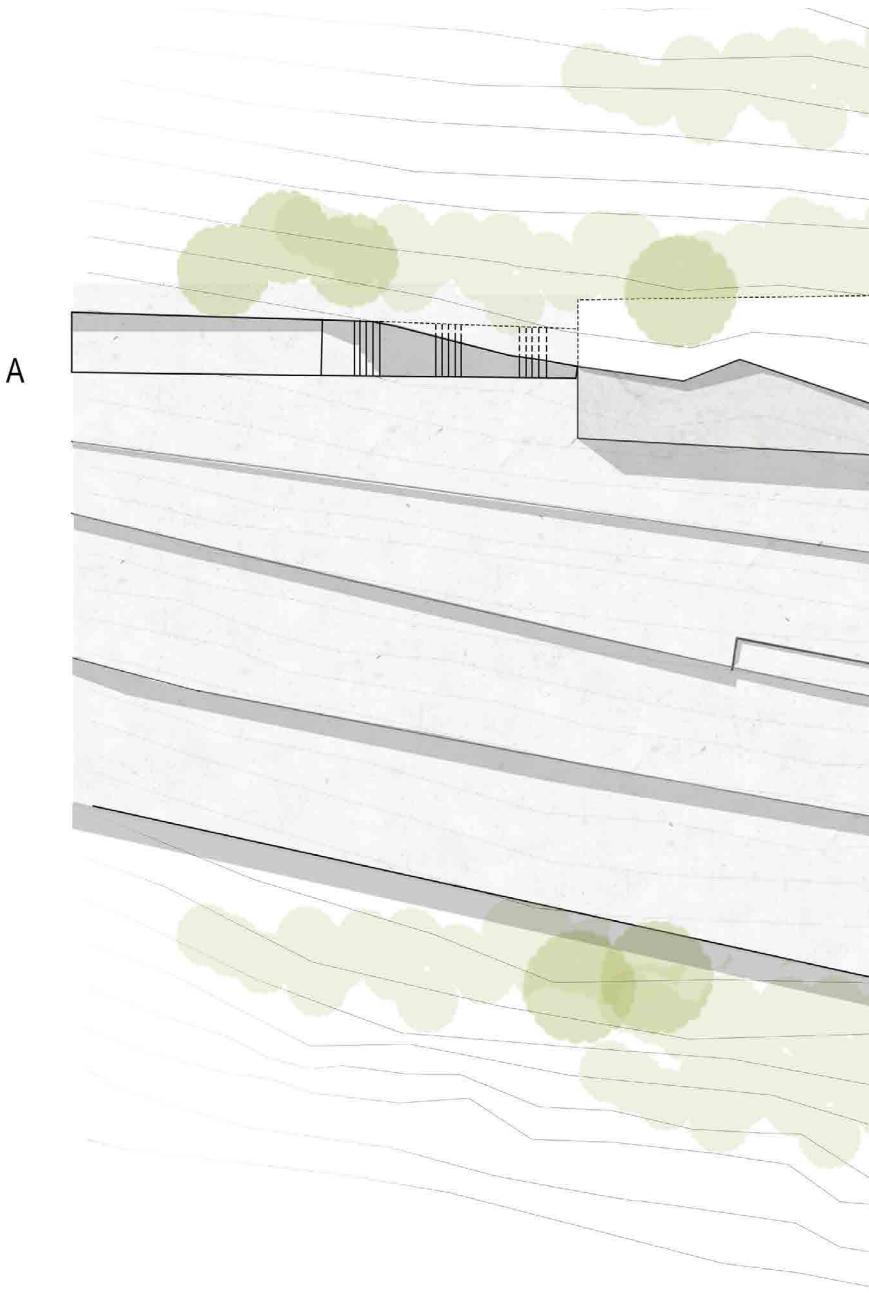
4.Creating height difference to adjust the landform.

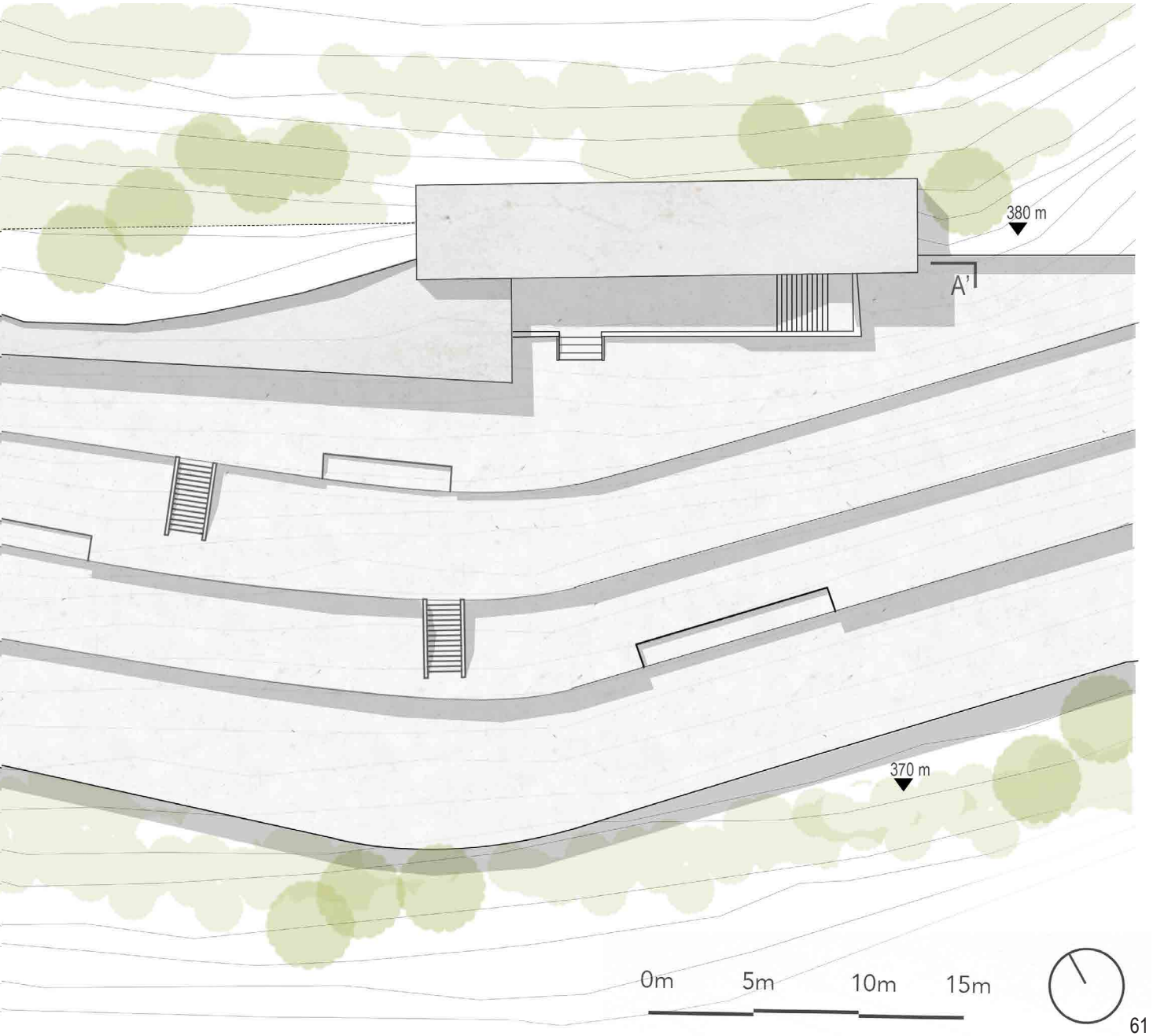


5.Setting small platform to rich the point.

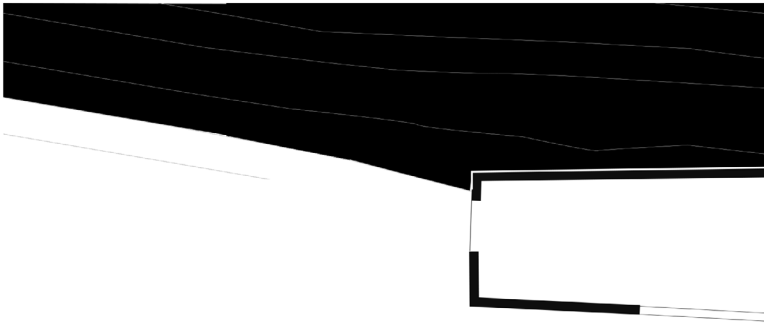


6.Creating connection between main and small platform.

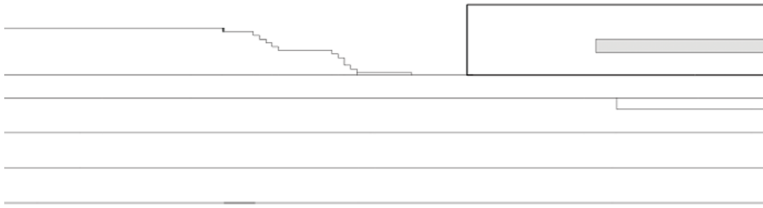

A


380 m
A'
370 m
0m
5m
10m
15m

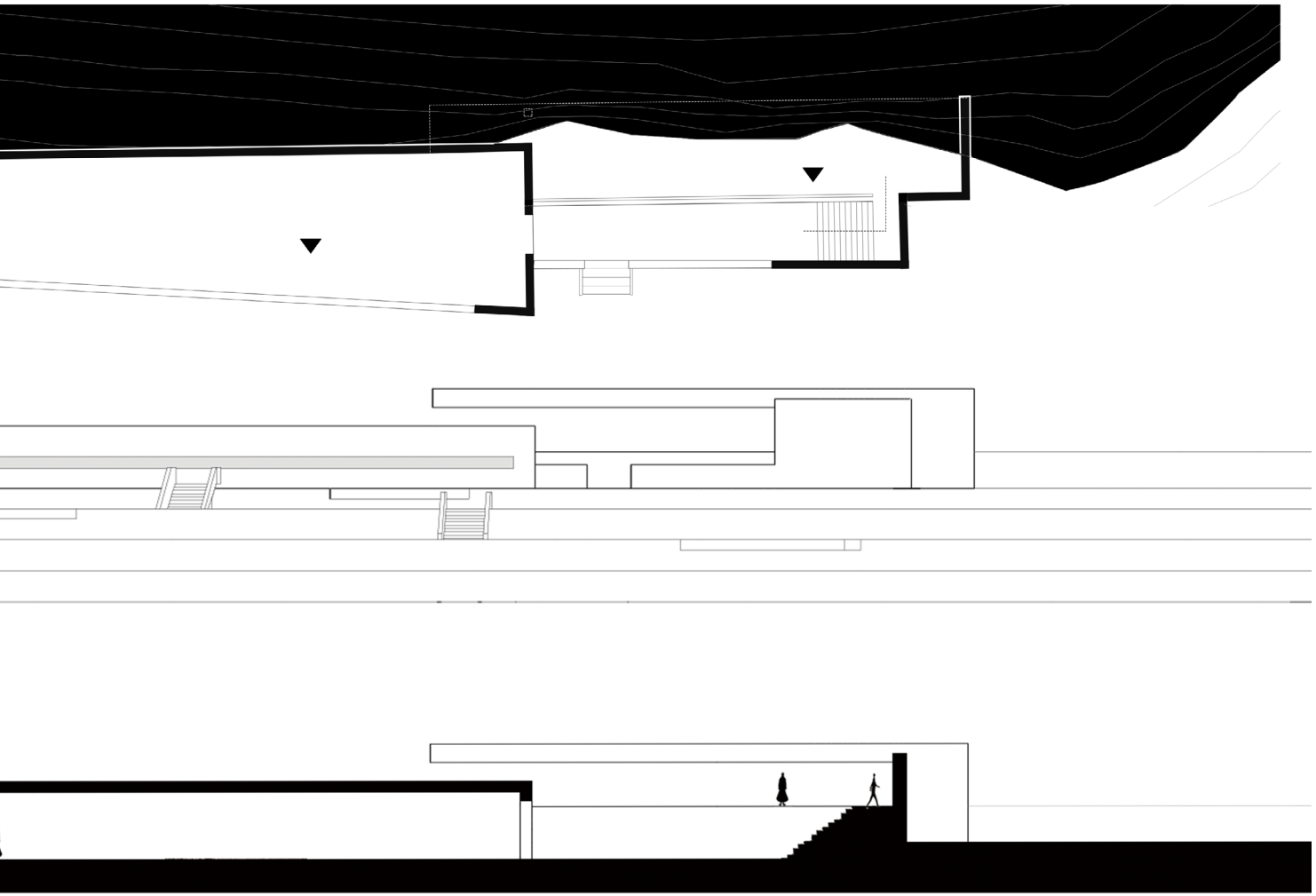
Ground floor plan 1:200



Elevator 1: 200

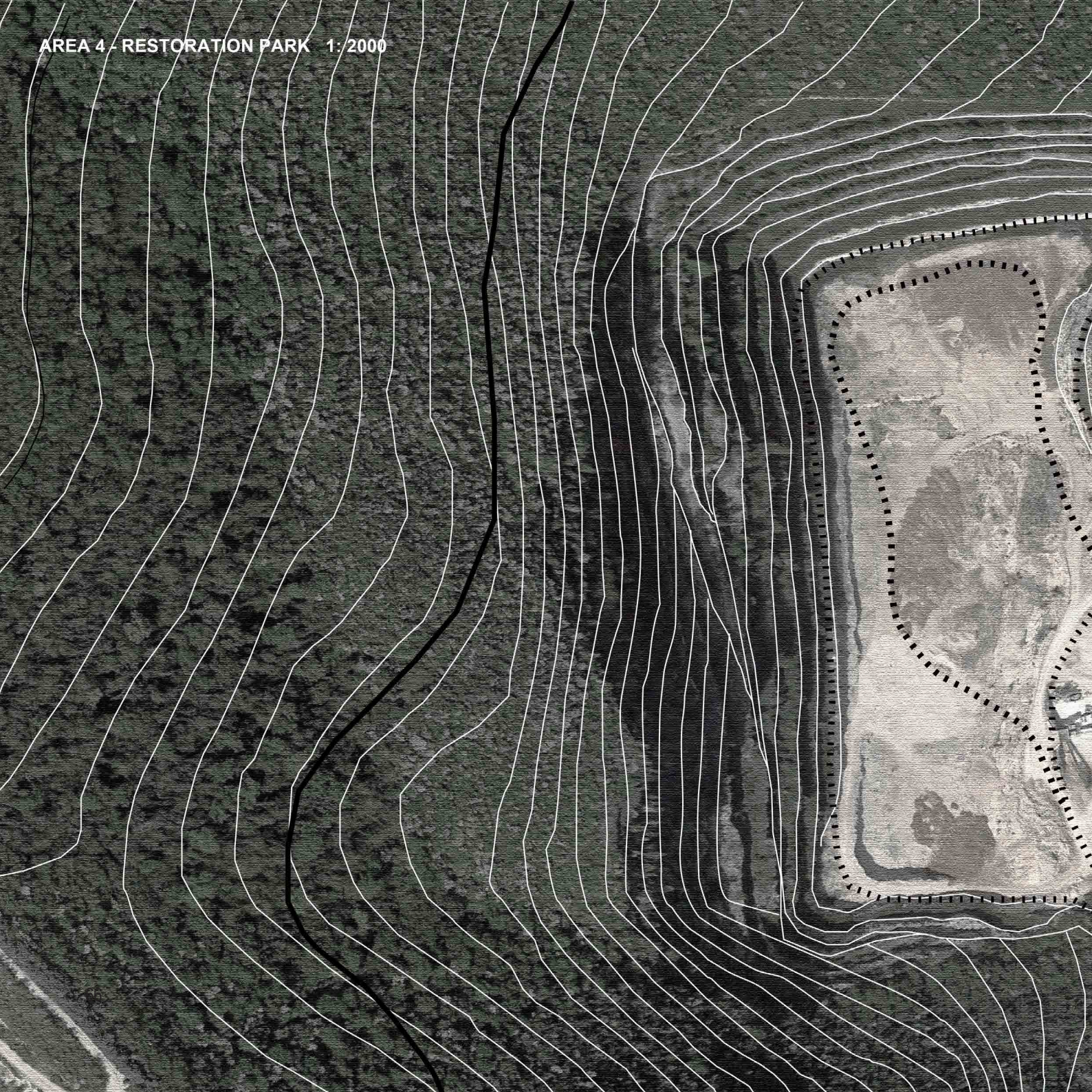


Section A-A‘ 1:200



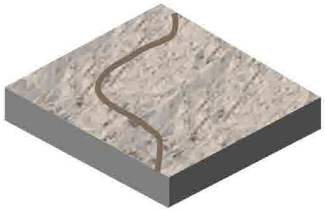
4.4 QUARRY RESTORATION

Existing landscape here is main a leftover from quarry process. Quarry is also an industrial ruin, to combine natural element and quarry element.Meanwhile the location is next to the towns,we are going to restore vegetation to form a park not only for the tourists, but also for the local citizens.

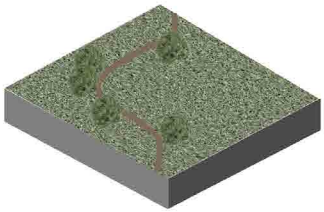

AREA 4 - RESTORATION PARK 1: 2000

Restoration Process

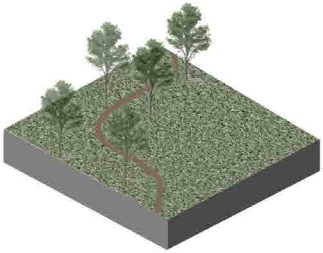
1.Cleaning and shaping the bared ground



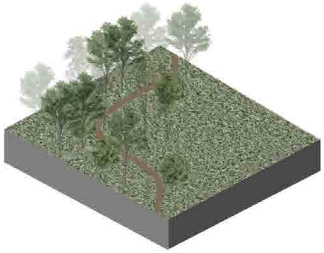
2.Setting the visiting route



3.Hydroseeding



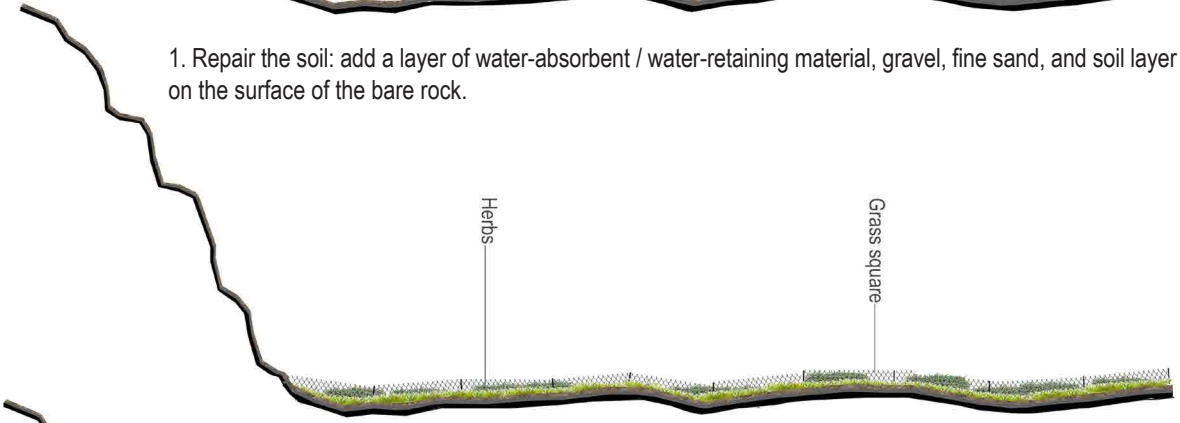
4.Planting trees



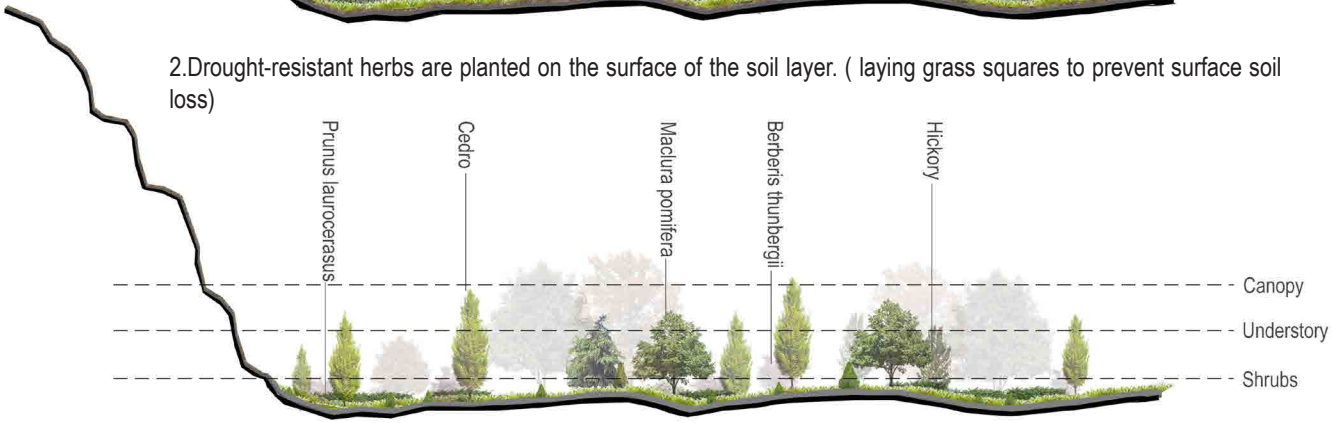
5.Consolidate plant communities

6.Gardening and constructing

1. Repair the soil: add a layer of water-absorbent / water-retaining material, gravel, fine sand, and soil layer (15-30cm) on the surface of the bare rock.



2.Drought-resistant herbs are planted on the surface of the soil layer. (laying grass squares to prevent surface soil loss)



3.Based on the restoration of greening, other herbs and shrubs, or small trees are gradually planted.

Restoration Plan

Vegetation choose

Shrubs

Berberis thunbergii

Prunus laurocerasus

Cedro

Maclura pomifera

Hickory

RESOURCES :

ANALYSIS IN LOMBARDY

https://www.openstreetmap.org

http://www.naviglilombardi.it/en/navigli/%EF%BB%BFnaviglio-grande/

https://www.aecgis-online.com

http://www.bicitalia.org/it/bicitalia/gli-itinerari-bicitalia/195-bi20-ciclovia-aida

ANALYSIS IN BREASCIA

https://www.openstreetmap.org

https://www.piste-ciclabili.com/itinerari/2666-rezzato-gavardo-salo-lonato-anello

https://www.bikemap.net/en/r/1342455/#/z13/45.5415854,10.334444/basic

http://www.serle.info/territorio/cave-di-marmo/le-cave-di-serle-la-storia

http://www.bicitalia.org/it/bicitalia/gli-itinerari-bicitalia/195-bi20-ciclovia-aida

https://www.itineraribrescia.it/botticino-paese-marmo/

https://it.wikipedia.org/wiki/Marmo_Botticino

http://www.consorziomarmisti.org/en/the-marble-road-the-virle-valley.html

https://www.euromas.it/it/cave/cava-botticino