



Supervisors:
Francesco Leoni
Fabio Giulio Tonolo

S330503
Julien
Laspalles

Re-using Sorrento's Coastal Heritage

A green tourist path
connecting the local
watchtower system

July 2026



Politecnico di Torino

Master of Science in Architecture for Heritage

A.y. 2025/2026

Graduation Session July 2026

Re-using Sorrento's Coastal Heritage
A green tourist path connecting the local watchtower system

Supervisors:
Francesco Leoni
Fabio Giulio Tonolo

Candidate:
Julien Pierre Francis Laspalles
S330503

Abstract

This study aims at reviving the coastal watch towers of Massa Lubrense, in Sorrento Peninsula of Italy, through the identification of a sustainable path which connects the architectural heritage of the region. This path, obtained with the use of a GIS-based procedure, has been architecturally designed, considering different scenarios that each segment takes based on the context conditions. The route's signage and furniture have been shaped taking into consideration the common architectural features of the towers, in order to enhance the coherence of the entire project. The towers' interventions, although varying case to case, share the equal non-invasive, reversible strategy, introducing proper functions to Massa Lubrense, according to their location along the path, as well as their immediate situation in the area. Thus, this project employs the new path to create a new relationship between the towers and the landscape, transforming them from passive historical remains, into active heritage contributing to the territory.

Aknowledgment

This thesis has been possible thanks to the support and the help of many persons to whom i owe my deepest gratitude.

I would like to thank my professors Francesco Leoni and Fabio Giulio Tonolo for their fruitful advice, insightful help and continuous patience, along the path of making this thesis. Their unconditionnal support led me to manage the completion of this work.

Special thanks to Stefano Ruocco and Domenico Palumbo from the Archeoclub d'Italia of Massa Lubrense, for their generous assistance with their knowledge of the territory and the watchtowers, as well as provinding essential ressources. I would also like to acknowledge Alba Fagnano for welcoming me in her site visit of Castello dell'Annunziata.

I am deeply thankful to my family for their unconditionnal support and belief in me, and to my friends for their emotionnal support.

I would like to deeply thank my partner, Zahra Naseri, for her constant ecouragement, her collaboration, her patience and her help on the site visit, with whom the realisation of this work became easier.

Finally, i am thankful to professor Irene Ruiz Bazán for her collaboration on my initial topic and her help transitionning on the current topic.

Table
of content

p. 3
p. 5
p. 7

p. 9

p. 15
p. 18
p. 27
p. 31

p. 39

p. 51
p. 52

p. 55
p. 66

p. 71
p. 72
p. 74
p. 82

p. 87
p. 90

p. 92
p. 98
p. 108
p. 116

p. 123

p. 127

p. 133

- i. Abstract
- ii. Acknowledgment
- iii. Table of Content

I. Introduction

- II. Context
 - . Historical Framework
 - . Territorial Framework
 - . Current State of the Towers

III. Case studies: Analysis of Leisure and Sport-Oriented Pathways

- IV. Sustainable Path Development
 - Manual Path Creation: Methodology and Examples
 - Data-Driven Path Creation: GIS Methodology
 - Final Map Path and Visual Output

- V. Path Intervention
 - Path Intervention Strategy
 - Path Design
 - Territorial Elements Design

- VI. Architectural Intervention
 - Materiality and Structural Strategy
 - Design Solutions
 - Punta Vaccola
 - Torre di Recommone
 - Torre Minerva
 - Torre di Capo di Massa

VII. Conclusion

VIII. Bibliography

IX. Annex

I. Introduction

This thesis aims to revive the Sorrento Coastal heritage through the creation of a sustainable touristic path, focusing on the municipality of Massa Lubrense, located at the end of the Sorrento Peninsula, in the region of Campania in Italy. Massa Lubrense, a city rich in history, during the viceroyalty period, was often invaded by Turkish corsairs. In answer to those invasions ten coastal watchtowers were erected. Those watchtowers are the cultural heritage that this work aims to revive and connect.

Despite the historical importance of the towers, many of them are currently abandoned and/or inaccessible. Additionally, the absence of a unity between them has limited their cultural visibility and appreciation. This project therefore explores the main question of how a sustainable network connecting these towers, together with a systematic architectural intervention, can contribute to the valorization and preservation of this coastal heritage.

To this end, two main aspects have been investigated: the territorial, and the architectural aspect. The territorial aspect will take shape on the design of a touristic path dedicated to the bike and pedestrian users. This path will be designed thanks to the territorial analysis through a Geographic Information System (GIS) process, and the consideration of various factors, namely topography, geographical information, network, and user's safety, to define the best possible path accordingly. Concerning the architectural intervention, a revival and linkage of the towers, that have been mostly damaged/abandoned, has been proposed, using lightweight materials and reversible structural strategies that generally unite the interventions. Ultimately, the three main objectives of this project are:

1. To connect the historical watchtower system
2. To improve the accessibility of the proposed sustainably developed path
3. To propose architectural strategies for the adaptive reuse of the towers

Methodology

1. Reuse Italy Materials

Originally, the study's topic started from the participation in the Reuse Italy competition, edition Reuse the Watchtower 2025¹, from which the historical information as well as digital drawings/models of the Minerva Tower, one of many towers in the site, were used as the basis of this project.

2. Secondary sources (Books, articles, and dissertations)

In a visit to the ARCHEOCLUB D'ITALIA of Massa Lubrense, the president of the Archive, shared additional relevant books, articles and theses, strengthening the theoretical backbone of this project.

1. ReUse Italy is an Italian corporation created in 2018 in order to promote cultural activities aimed at saving the historical heritage. They have been organising workshops, architecture competition of idea, exhibitions, publications... In the first half of 2025, they organised a competition aiming to revive Torre Minerva in Massa Lubrense. <https://www.reuseitaly.com/competitions/reuse-the-watchtower-sorrento/>

3. Google Earth Pro

The software was used in order to develop a preliminary manual path creation process, in which an optimal path was obtained, limited to the Google Earth Pro low level of detail in the satellite view, presence of shadow, and vegetation. This attempt was later criticized by the site visit observation which led to a digital analysis instead.

4. GIS bank data, geoportals, OpenStreetMap

The territorial aspect of this thesis, focusing on the Sorrento Peninsula and more precisely on the city of Massa Lubrense, is processed through a GIS method, through the use of the software ArcGIS Pro², which consists of different steps. The first step is to collect the data necessary for the analysis to understand the territory, and to create a base for the creation of maps. Such data have been acquired from Geoportals, and OpenStreetMap, and processed with the ultimate goal of a Network Analysis³ within ArcGIS Pro. GIS was selected due to the ability to integrate multiple territorial datasets and

5. Direct access to the site (photos, interviews, and Mapillary acquisitions)

Photos and recordings of the site visit to Massa Lubrense, as well as a meeting with the president of ARCHEOCLUB D'ITALIA of Massa Lubrense, resulted in better understanding of the context and towers. The ownership status, in addition to the accessibility comprehension of the site by walking tower to tower during the visit, eventually played a fundamental role in the validation and correction of previous acquired data.

This walk was accompanied with recordings of the path with Mapillary⁴ in order to be added to the Google Street View bank as well as OpenStreetMap dataset.

Structure of the Thesis

This thesis will be structured in the following parts:

Firstly, a context analysis [II. Context, p.15], presents the territory and the history related to the watchtowers. The historical framework [II. Context, p.18] traces relevant chronology, and situates Massa Lubrense and the Sorrento Peninsula, explaining the function of the coastal watchtowers. The territorial framework [II. Context, p.27] completes the description of the context by documenting the physical composition of the territory, mainly topography, and morphology, as well

2. "ArcGIS Pro is desktop geographic information system (GIS) software for advanced mapping, analytics, and data management." Esri, "ArcGIS Pro", accessed January 25, 2026, <https://www.esri.com/en-us/arcgis/products/arcgis-pro/overview>

3. The Network Analysis is realized using the Network Analyst extension in ArcGIS Pro. This extension can be used for various tasks and to answer various questions. The Network is a system of interconnected elements, such as edges and points representing possible routes from one location to another. It is including eight types of solvers such as Routes, Closest facility, Service areas, Location-allocation, Origin destination cost matrix, Vehicle routing problem, Last mile delivery and Waste collection. In the context of this work the solver used is the Route solver.

4. Mapillary is a street-level collaborative imagery platform. It is an open-source sharing of crowdsourced geotagged photos. The goal of that platform is to represent the world at a street level. It includes different tools, based on computer vision, in order to process the image acquired by the users, such as privacy blurring, image segmentation, 3D reconstruction, traffic sign recognition... This platform is including connections with other platforms such as OpenStreetMaps, ArcGIS...

as accessibility conditions. Finally, this chapter concludes with a report on the current state of the towers [II. Context, p.31] and their landscape, identifying the conservation conditions that might affect the further restoration strategies. Such assessment is based on the field observations, and on-site inquiry of specialists in case of inaccessible properties.

Secondly, an analysis of some case studies of leisure and sport-oriented pathways was presented in order to take inspiration and study from the strengths and the weaknesses of those projects. [III. Case studies: Analysis of Leisure and Sport-Oriented Pathways, p.39]

The next methodological chapter, describes two parallel manual and digital work flows, to define a sustainable path that connects the watchtowers in the area. The preliminary manual process [IV. Sustainable Path Development, p.52] demonstrates the limitation, and the data-driven path creation explains the GIS and mapping workflow [IV. Sustainable Path Development, p.56], resulting in cartographic outputs that propose the sustainable path [IV. Sustainable Path Development, p.66].

Using the GIS outcome as a baseline, the next chapter moves to design of the route [V. Path Design, p.69]. After describing the development of the trail, the design intervention for the path is illustrated, by showcasing the track layout and the elements within it. Signage, seating, and surface treatments are example of such elements intended to facilitate a safe and low-impact path for pedestrians and cyclists.

Focusing on the towers themselves, the final chapter [VI. Path Design, p.85] aims to develop a coherent design language for the global intervention. It defines the materials mainly as lightweight concrete, timber, and fabric; and the traditional timber joinery as the main structural choice. The design solutions for each typology of tower with respect to their state of conservation, from well-preserved to ruined, includes a range of conceptual schemes to construction detail drawings. The proposals are essentially set to be recognizable, reversible, light, and compatible.

This study takes place on the Sorrento Peninsula, in the city of Massa Lubrense. This chapter will outline the history of the Sorrento Peninsula, focusing on Massa Lubrense, to explain the purpose of the creation of such watchtowers. Followed by the historical framework, a territorial description of the region is presented, indicating the significance of its topography, as well as the state of the conservation of the towers and their site. The section concludes the research-based considerations to be taken into account later in the design processes, including the chosen case studies and their typologies.

II. Context

Massa Lubrense

Massa Lubrense is a comune of 14 116 inhabitants, located on the Sorrento Peninsula, on the west of the province of Naples, in the Campania region. The city is divided in twenty villages or hamlets, such as Nerano, Sant'Agata sui Due Golfi, Annunziata, etc. This comune has been chosen as the focus of this study, particularly for hosting watchtowers of different state of conservation.



Figure 1 - Campania Region localization at the national scale

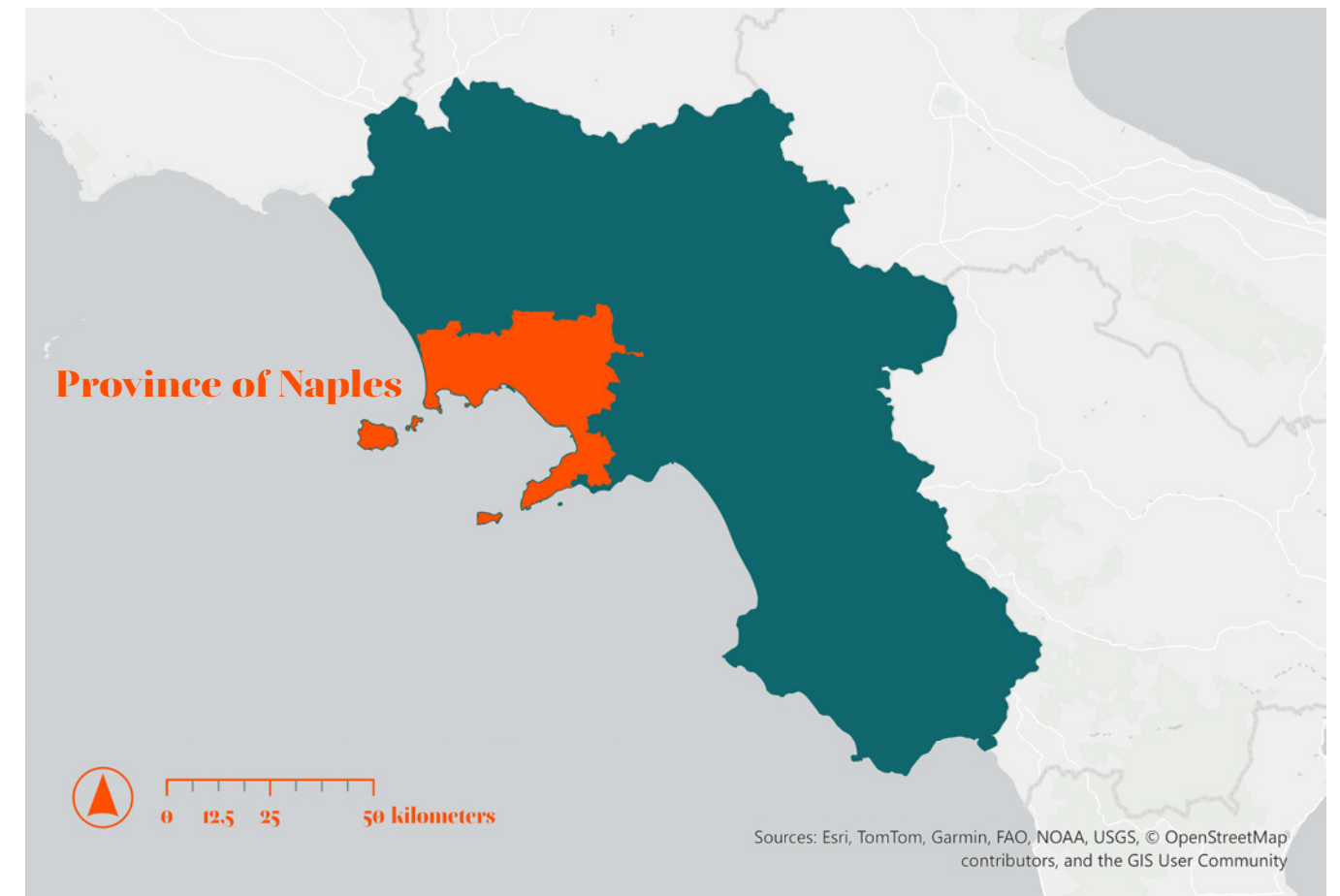


Figure 2 - Province of Naples localization at the regional scale

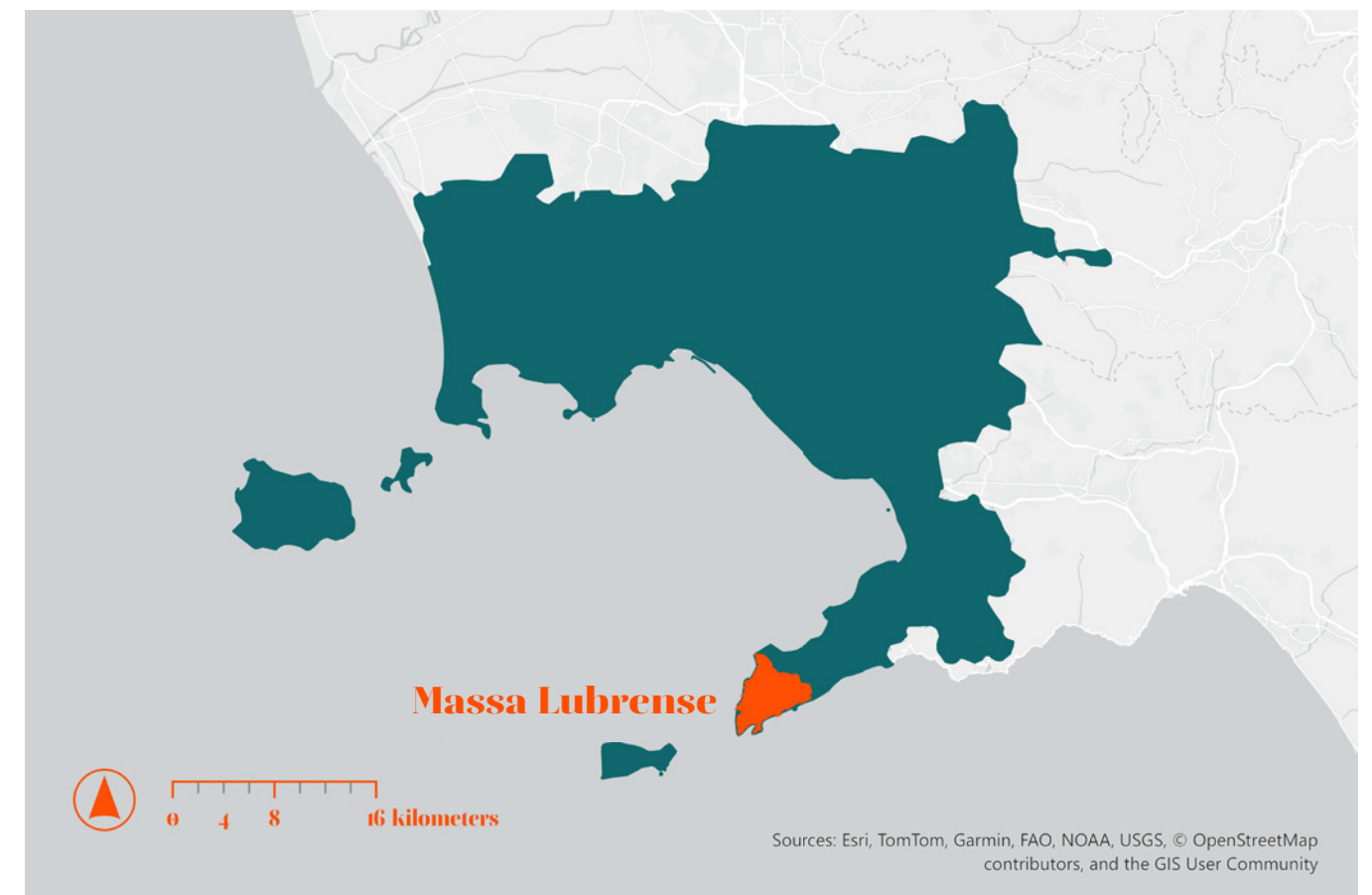


Figure 3 - Massa Lubrense localization at the province scale

Historical Framework

Antiquity

The territory of what is known today as Massa Lubrense has a long history of maritime importance that goes back to even centuries before the construction of the coastal watchtowers. In that time period, it was not only known by a different name, but also included a larger area. The area was called the “Promontory of Minerva” that was referring to the Punta Campanella. Standing at the entrance of the Gulf of Naples, the promontory as a highly significant maritime location, was easily identifiable, and known to be a sacred place and a navigation landmark.



Figure 4 - Representation of Minerva. Xylography by M. Daviai. *La Grotta di Giano*, Accessed May 28, 2026. <https://grottadigiano.wordpress.com/2025/07/13/il-promontorio-di-minerva-tra-storia-mito-e-multiple-identita/>

The first occupation of the area is attributed to the Phoenicians who settled and built a sanctuary, as well as the Temple of Minerva in the position of the present-day Torre di Minerva. The temple described as one of the most sacred sites of the Mediterranean Sea was cherished not only by the Phoenicians, but also the Greek, Egyptians, and Romans, and was mentioned by several classical authors such as Aristotle, Strabo, Pliny the Elder, and Dyonisosius Periegetes. Regarding the location of this promontory of Minerva, it has been associated with the myth of the Sirens.



Figure 5 - *Ulisse e le Sirene*, Intarsia. Museo Correale di Terranova, Sorrento. From Ercolino, Romolo, *Sentinelle di Pietra: Le torri di guardia e di difesa della Costiera di Amalfi e di Sorrento*, 2022. p.10

The temples at the time were built on elevated position, and close to the sea, so as to be visible to the sailors; the reason being the close connection between the sacred architecture and navigation point. This logic was naturally applied to the temple of Minerva, making the promontory as a point of observation, orientation, and control.

After the Phoenician period, the Greeks settled in the more fertile, inland areas of the peninsula and built another important, more monumental, and larger temple at the bay of Fjord of Crapolla. The so-called temple of Apollo, a religious building for the Greeks to express their identity, also served as a maritime reference point, as well as a point of gathering for the merchants and travelers of the Mediterranean.

This ancient system reveals a close similarity with the later coastal watchtowers of the late medieval times. While the function transformed from religious to defensive purposes, both typologies were considered as the maritime guide, navigation landmark, and a tool for territorial control. In both cases, architecture acted not only as an isolated object but also as part of a territorial system that affected movement, communication, and observation along the coastline.

Early Christian Transformation

Under the Roman Empire's administration, the religious significance of the Phoenician and Greek sanctuaries declined. Between the first and fourth centuries AD, these pagan sacred sites throughout the Mediterranean began to be destroyed, abandoned, or reinterpreted due to the arrival and spread of Christianity.

Consequently, the Temple of Minerva lost its original pagan function and ceased as a sanctuary. Although it was partially destroyed and reinterpreted through the Christian symbolism, the site remained of importance due to its geography. Similarly, the Temple of Apollo was abandoned, while the location continued to be a significant place in the collective memory and territory of the coastline.

It is in fact during this period that the name Massa Lubrense emerged. Massa is generally associated with a rural estate or the reorganization of the population into scattered rural communities called Casali. In this case, the organization refers to that of the Christian era in this area. The second component, Lubrense, derives from the Latin expression *Delubrum Minervae*, meaning the “Sanctuary of Minerva”. The origin of the name reflects the layers of the history: the Christian reorganization of the communities, and the memory of the ancient sacred buildings. The location, meanings and territorial functions of the pagan temples, even though non-existing as religious spaces, remained deeply rooted in the identity of the coastline.

Medieval and Ecclesiastical Era

While in the early Christian period the populations resided mostly near the coast, over time they dispersed inland, landowners and agriculture families created rural estates which resulted in the creation of small communities and small urban centers. Clusters of houses emerged and become casali, and religious build-

ings “follow” the population. In other words, churches and chapels were established to serve the community that has already emerged.

Similarly, the coastal defense system was affected by these dispersed settlements in Massa Lubrense. Considering the territorial control and protection, resulted in the emergence of multiple watchtowers. In this context, the network of coastal watchtowers is a later layer in the historical evolution of Massa Lubrense, following the ancient system of maritime sanctuaries and the medieval network of rural settlements.

Late Medieval and Early Modern

The history of the city of Massa Lubrense was really tied to the context of the whole mediterranean region during the late Middle Ages⁵ and the Early Modern period⁶. The Mediterranean Sea, at that time, was tormented by strong geopolitical confrontations. The different maritime powers of the region such as the Spanish Empire, Venice and the Papal States had to face the menace of the Ottoman Empire trying to expand their territory. In the meantime, within the Mediterranean bassin, a strong activity of barbarian corsair was present. Due to those threat the italians coastlines has been millitary reinforced in order to be able to apply surveillance to avoid intrusions of corsairs.



Figure 6 -Image illustrating the ambush of the corsairs fleet. From Russo Flavio, *Le torri anticorsare vicereali: con particolare riferimento a quelle della costa campana*, 2001. p.54

At the same time, in early XVIth, Massa Lubrense, part of the territory of the Kingdom of Naples, became part of the Spanish Empire, under the power of the Vice-

5. The Late Middle Ages are defined by the years 1300 to 1500 of European History. In opposition to the rest of the Middle Ages it is a period that start seeing the roots of transformations that led to the Early Modern Era.

6. The Early Modern period corresponds to the times between the mid-late 15th century to the late 17th century, early 18th century. It is a period of transition characterized by the opening and the interest of the countries to globalization thanks to for example the expansion of the transatlantic trade, but also the Scientific Revolution, the Protestant reformation...

roys⁷. The administration at that time constated the vulnerability of southern Italy, due to the lenght of the coastal border, that lacked a strong and organised defensive system. Between 1532 and 1553, many ordonnances has been made to ask the municipalities located on coastal areas to built defensive coastal watchtowers. In 1537, the viceroy Don Pedro de Toledo issued the ordonnance for the area covering the Sorrento Peninsula where Massa Lubrense is located. This was following the spanish millitary strategy, that strategy was following some codes such as having early warning systems, making the communication accros the coastline the most efficient and fast as possible. They were also trying to reorganise the existing local millitias. The ordinances were made not only to build the towers, but also in order to provide gunpowder to the tower guards and to install some local taxes to finance the work related to those edifice.

However, Massa Lubrense has not realised the construction of their own tower, when in 1558, during the night on June 13th a turkish fleet of corsair, landed in the marina called Arcora (today Marina del Cantone, in Nerano) [Figure 7]. The general offensive was led by Piyale Pasha and Dragut⁸ [Figure 8] and attacked simultaneously Massa Lubrense, Sorrento, Vico Equense and Sant'Agnello. The corsairs ravaged the land, destroyed the cities captured and killed the citizens, only few people managed to save themselves in the surrounding hills and forests. It has been reported that over five thousands peoples has been taken as slaves during that offense. This event is know as the “Sacco di Sorrento”.



Figure 7 -View of Marina di Cantone. From Russo Flavio, *Le torri anticorsare vicereali: con particolare riferimento a quelle della costa campana*, 2001. p.85



Figure 8 -Representation of the Turkish corsair Dragut. From Ercolino, Romolo, *Sentinelle di Pietra: Le torri di guardia e di difesa della Costiera di Amalfi e di Sorrento*, 2022. p.13

Ensuing that event the construction of the watchtower has been made a priority on the Sorrento Peninsula and in the city of Massa Lubrense. This has been reen-

7. During the XVIth century, in 1503, the Spanish Empire conquered the Kingdom of Naples, making Naples a viceroyalty of the Empire. A viceroyalty is a territory governed by a viceroy, ruling as the direct representative of a monarch. Between 1503 and 1532, many viceroys have been rulling the territory of Naples. In 1532, Don Pedro de Toledo (1484-1553) become the viceroy of Naples, with the will to reinforce and protect the territory of the jurisdiction of Naples.

8. Dragut (1485-1565) & Piyale Pasha (1515-1578) were two admirals of the Ottoman Empire's Navy. In June 1558, they conquest Reggio Calabria from were they conquest progressively the Isole Eolie, the Amalfi coast, then Massa Lubrense, Cantone and Sorrento, before heading towards northernmost territory.

forced by the fact that the Sorrento Peninsula, located between the Gulf of Naples and the Gulf of Salerno, held a critical defensive position. The topography and the particularities of the territory with the presence of promontories hiding many creeks, was increasing the risk that corsairs could enter the territory without being seen and repeat what happened in 1558, the land being covered by forest and being completely irregular. Despite the risks it was creating, those promontories were ideal in order to construct watchtower with a wide visual coverage.

The Viceroyal Coastal Watchtowers

The coastal system of the watchtower created under the ordonnance of the viceroyal administration was covering two thousands kilometer of coast, with an alignment of three to four hundred towers, deployed in average every five kilometers. All the towers were on different kinds of soils, different heights, different proximity to the coasts, some on the beach, some standing on top of a promontory. The disposition and their functioning was resumed as “a tower, two cannons and three men”. The towers withing Massa Lubrense, thanks to the topography are mostly located alongside cliffs or on top of promontories, while the tower in Nerano is located within a creek, on a former beach.

In terms of their form, two types of cylindrical and squared towers existed. The cylindrical towers were the one that have been reusing pre-existing towers



Figure 9 -Map of the Sorrento-Amalfi Peninsula showing the position of the viceroyal watchtowers, 1704. From Russo Flavio, *Le torri anticorsare vicereali: con particolare riferimento a quelle della costa campana*, 2001. p.83

from previous periods such as the Angevine⁹ or the Aragonese¹⁰. Massa Lubrense's towers are only of squared form, built as truncated pyramid, with flat roof, inspired by the decks of the boats that they were designed to defend the coast from by using the canons they were hosting. The towers were mostly buttressed due to the terrains variety.

Despite their defensive function, their main role, as the name suggest, was surveillance, in order to ring the alarm or to signal to the territory if an invasion was spotted. Depending on their location, different kinds of visual signals were used, such as smoke signals during the day, fire signal at night, as well as flags or reflective surfaces. Moreover one acoustic methods was to hit kerosene lamps on the stone wall of the towers, in order to signal to the other towers, until the sound reach the nearby towns.

Based on the level of invasion risk that each area was exposed to, the tower's size and battlement systems differed. Starting from the locations at the lowest risk, this typology, the so-called *Torri ad una sola troniera* [Figure 10.A] hosted only one canon, of which only one tower, Torre di Capo di Massa, existed in Massa. The second and most common battlement system, included three crenel and four merlons, present in at least half of the towers of the territory [Figure 10.B].

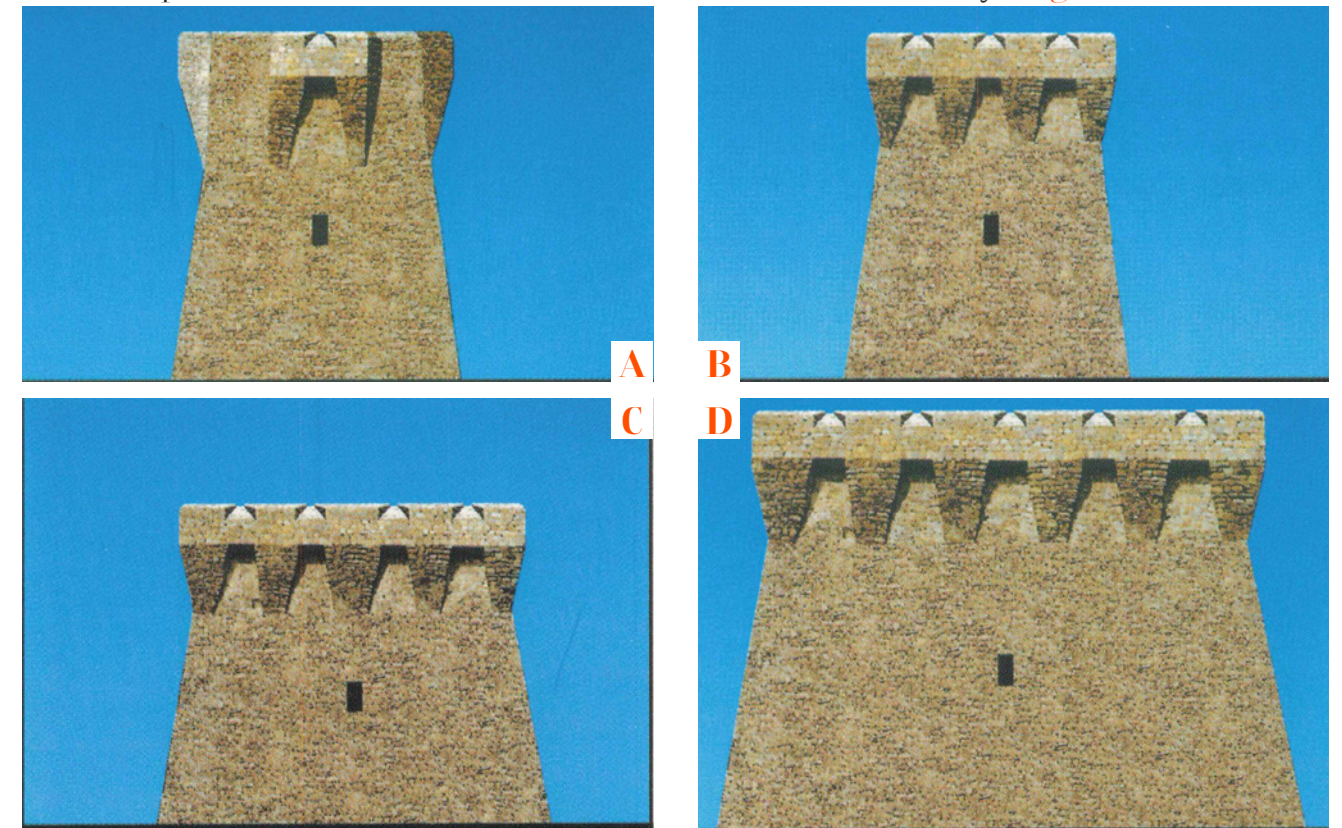


Figure 10 -Typology of Watchtowers. From Russo Flavio, *Le torri anticorsare vicereali: con particolare riferimento a quelle della costa campana*, 2001. p.92

9. In 1282, the Kingdom of Naples is created from the expulsion of Charles 1er d'Anjou from Sicily. The latter then King of Sicily, manage to keep is authority on the continental part of the Kingdom of Sicily, becoming the Kingdom of Naples. Naples being the capital decided by Charles 1er. This mark the beginning of the Angevine period of the Kingdom of Naples, lasting from 1282 to 1442.

10. The subsequent period of the Kingdom of Naples was the Aragonese period. Named after the king Alphonse V d'Aragon who conquered in 1442 the Kingdom of Naples and the Kingdom of Sicily. That period lasted from 1442 to 1495, interrupted by the invasion of Italy by France in 1494, beginning the Italian Wars.

In order to widen the defense range, the third typology was created as an extension of the former crenellation system, resulting in *Torri a quattro troniere* [Figure 10.C], which utilized four canons. The final and strongest battlement system allowed for five canons, sitting on the most strategic points of the territories [Figure 10.D]. In case of Massa, the only tower of this type existed at the end of Punta Campanella, facing the Capri island.

History of the Watchtowers

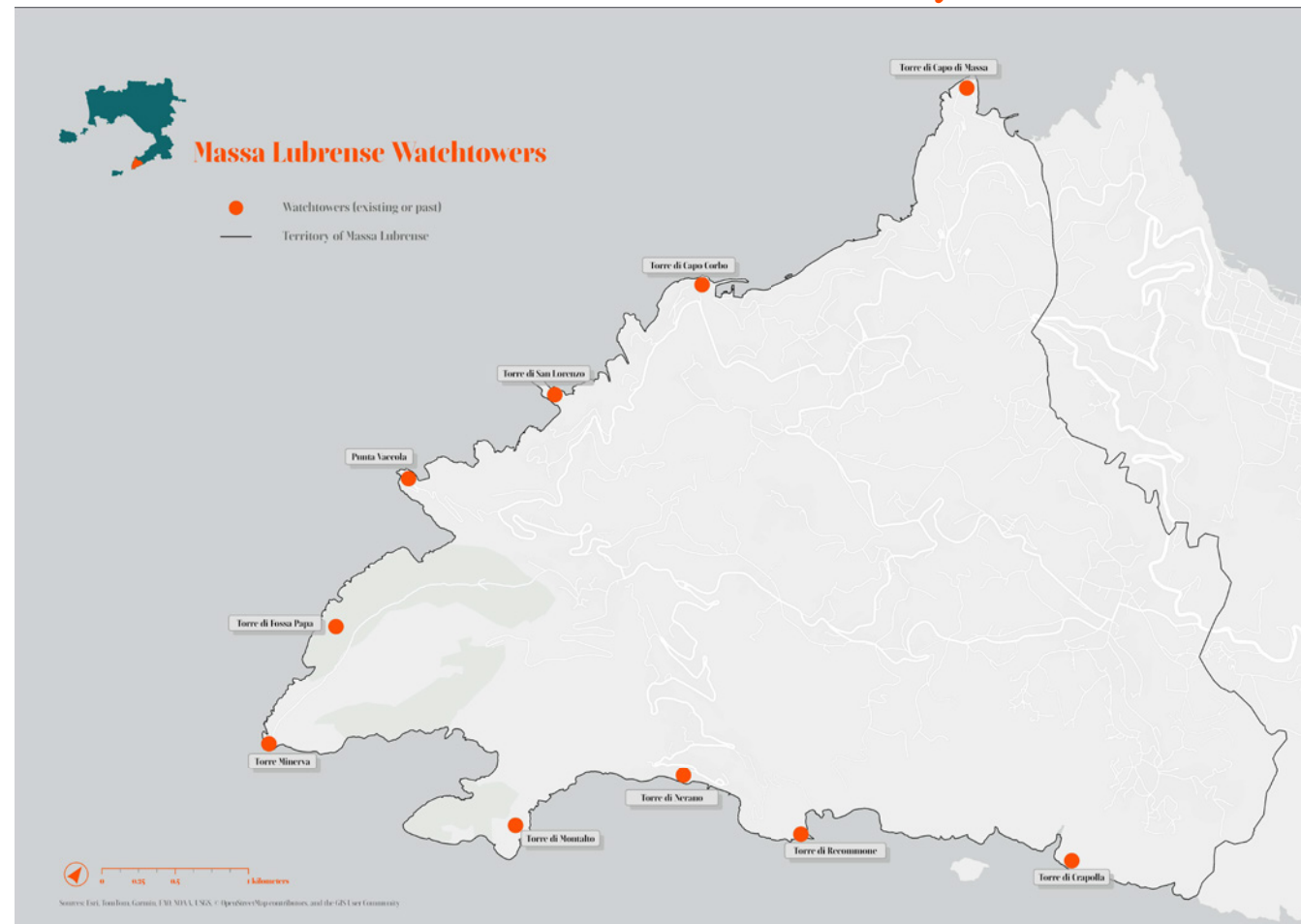


Figure 11 – Map of the location of the watchtowers within the territory of Massa Lubrense. Produced with ArcGIS Pro by the author.

Torre di Crapolla

Torre di Crapolla was built in 1567 close to the beach of Crapolla to defend the coastal area as well as the farmhouses nearby. The name is referencing the previously existing temple of Apollo close by. The plan has been built as a square, elevated as a truncated pyramid, crowned by four corbels on each side.

The topography allowed the creation of a cistern on the lowest level of the tower which supplied the water used by the garrisons. The entrance was located towards the inland and a staircase in the thickness of the corresponding wall. Some tower keepers of Crapolla are known, such as , Matteo De Trapano in 1583, Minico di Rosa in 1621, and Giovanni Fasulo in 1659, according to which, it can be assumed that it was in-use for about a century.

Torre di Recommone

Torre di Recommone also known as Recomone, Recamone, or Roccamone, was built during the viceregal period. It had to guard the beaches of Recommone and Cantone. It resembles the viceregal towers of smaller size, and it is constructed with limestone and Sorrento grey tuff. Some tower keepers of this tower included Giovanni Lopez in 1569, Clemente di Rosa in 1619, and Murtino Cungiano in 1659.

Torre di Nerano

Torre di Nerano built by Berardino Turbolo in 1558 close to the marina of Cantone or Nerano, is also known as Torre di Cantone, or Torre al Marina del Cantone. Its localization was a response to the past invasions , such as the Durazzeschi in 1390, the repetitive attack of the barbery pirates, and the Turkish army's invasion in 1558.

This two-storey, four corbel tower, has a thicker wall facing the sea due to the higher exposure to the attacks. A guardhouse for armaments storage purposes is located on the parade ground. The keeper was in charge of three to ten soldiers to control the coast. The only keeper known today was Antonio Mellino in 1659.

Torre di Montalto

Torre di Montalto or di Mortella or di Jeranto was built at the same time as the rest of the towers, on Punta di Montalto. It's position was the most strategic among the peninsula allowing wider control and safer defence. Its main role was to control Bay of Jeranto which was previously used as a hide-out by pirates to ambush the ships commuting to Naples. The keeper known today was Pietro De Amitrano in 1583.

Torre Minerva

Contraty to the other towers, Minerva was constructed to replace an obsolete existing tower dating back to the Angevine period. This former building was commissioned to Marino Giracio of Vettica Maggiore, by Charles II of Anjou, to protect from Barbars, Sicilians, and Aragonese corsairs in November 18th 1334. Paolo della Monica of Cava dei Tirreni was contracted in September 13, 1566, to build a new tower, to guard the entire Sorrento peninsula, due to the structural threat that the new weaponry was bringing upon the original building.

The cylindrical Angevine form was then turned into a truncated pyramid, with crossed barrel vaults to ensure higher strength. The guardhouse, at the mountain side was on the parade ground that included five corbels. A further characteristic of this tower was the presence of a bell, resulting to the renaming of the area as Punta Campanella by the locals. The known keeper of Minerva was Costanzo de Simone in 1659.

Torre di Fossa di Papa

Torre Fossa di Papa or “della papera”, was built on the north of the peninsula, had a dominant position, allowing innovative construction solutions, such as the fact that the tower was built oblique to the coastline in order to be exposed less to

the enemy.

The architecture is similar to that of Torre di Nerano, with an additional oven on the first floor and a two-room guardhouse for storing weapons. The only known keeper was Martino Tanzillo in 1584.

Torre Vaccola

Torre Vaccola, or Voccola, or Vacula, Baccula, or di Punta Baccoli, was built at the same time as the other towers, and the only information that could be found is few of the keepers, which can provide an idea on the active years of the tower; namely Diego Hernandez in 1569, Giovanni Suarez (de) in 1582, and Antonino di Costanzo in 1659.

Torre di San Lorenzo

Torre di San Lorenzo, the smallest tower of Massa Lubrense, was built on a rocky spur. Its location was previously a roman villa. Its position and size resulted in a single floor tower. Tommaso Velasco, Vincenzo Cangiano, and Vincenzo Antonio Cangiano, were San Lorenzo's keepers in 1569, 1621, and 1659 respectively.

Torre di Capo Corbo

Torre di Capo Corbo, or Capo Corvo, or La Mana, or Torre della Marina della Lobra, located on Punta San Liberatore, was initially built during the 13th century and was demolished during the Spanish/viceregal period due to low structural strength with regards to the new artillery technologies. It was rebuilt sharing the same architecture with that of Fossa di Papa and Montalto. In office, in 1569, Stefano Catuognolo is the only keeper known today.

Torre di Capo di Massa

Torre di Capo di Massa or di Capo di Villazzano is located where two roman villas previously existed. It was the final tower built in Massa Lubrense, using almost only grey Sorrento tuff. Its ground floor vault was reinforced with an arch for more stability. The only keeper known today was Antonio Vasques in 1584.

Territorial Framework

Massa Lubrense, sitting at the edge of the Sorrento Peninsula, is characterized by steep topography at the coast, fragmented accessibility, and a historical defense-related landscape which contains a network of seaside watchtowers. Recognition of such physical complexity is fundamental for a territorial, and architectural intervention in the area, since the geography and morphology determine the weaknesses and opportunities. This part of the study attempts to describe the location, topographical situation, accessibility, and current state of the territory.

The territory of Massa Lubrense is composed of a coastal front, interrupted by the presence of cliffs and irregular elevated plateau. In other words, the elevation levels do not always follow a continuous rise or descent, but unexpected higher levels exist at the shores. This combination of cliffs, flat beaches and mountainous-like orography, is what makes Massa's geography peculiar. [Figure 12] depicts such peculiarity, dividing the territory into five elevation levels, ranging from sea level to around 530 meter.

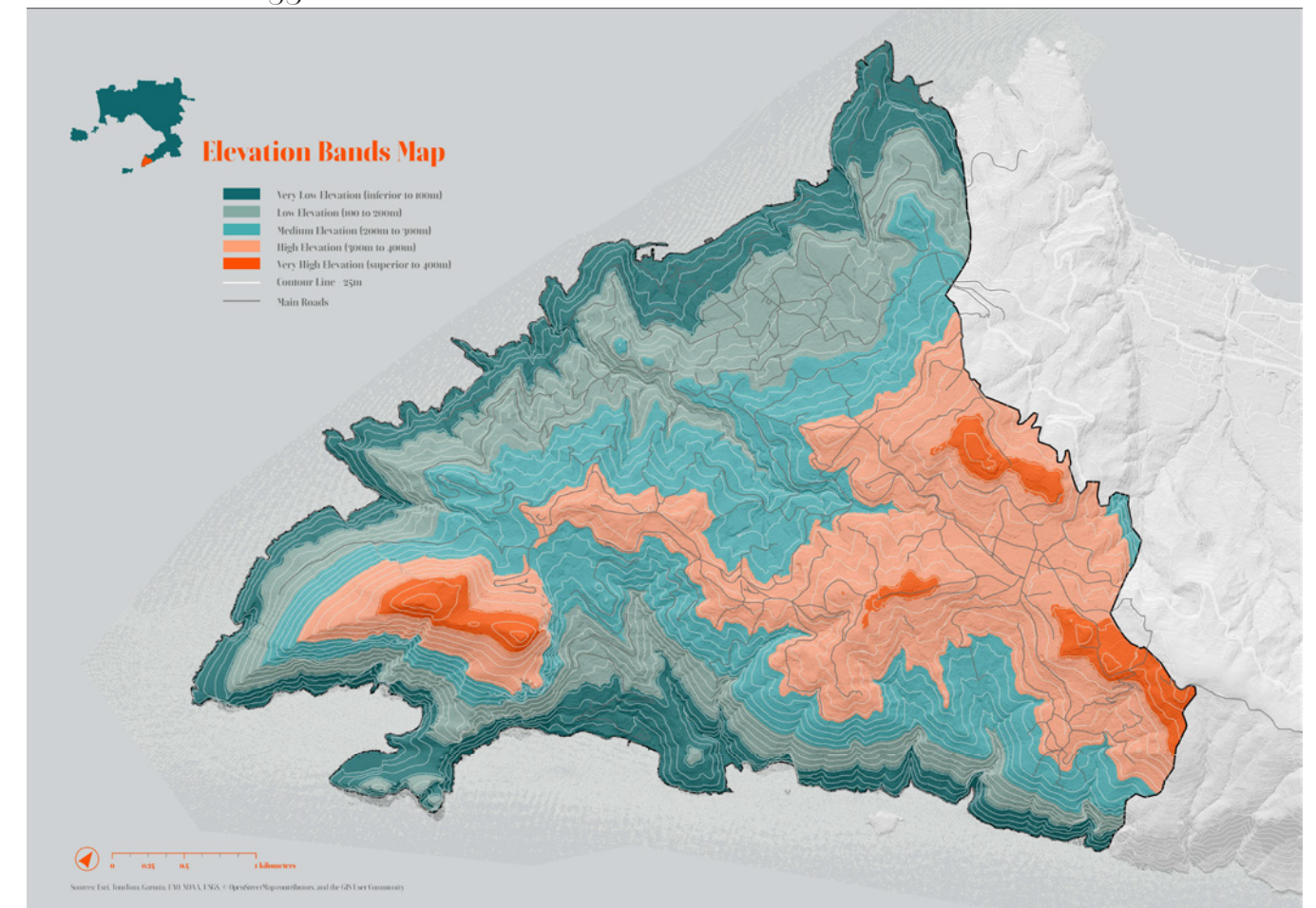


Figure 12 - Elevation Bands Map. Produced with ArcGIS Pro by the author.

This ranges between Very Low (18 percent) to Very High (4.6 percent); more than 75 percent of the territory lie within Low, Medium and High elevation levels, which are represented in an almost equal share (22.6 ; 26.7 and 28.1 percent respectively).

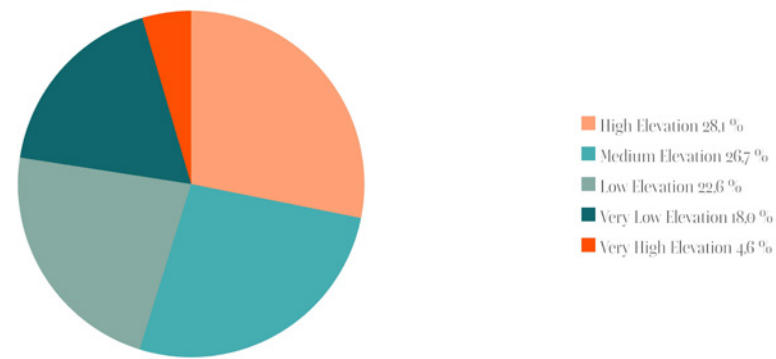


Figure 13 - Pie chart of the repartition of the Elevation levels in Massa Lubrense. Produced by the author

The high variation in altitude on the small territory of Massa Lubrense affects the accessibility and walkability. This matter has been presented in a slope classification map [Figure 14] to better understand the conditions for different kind of users.

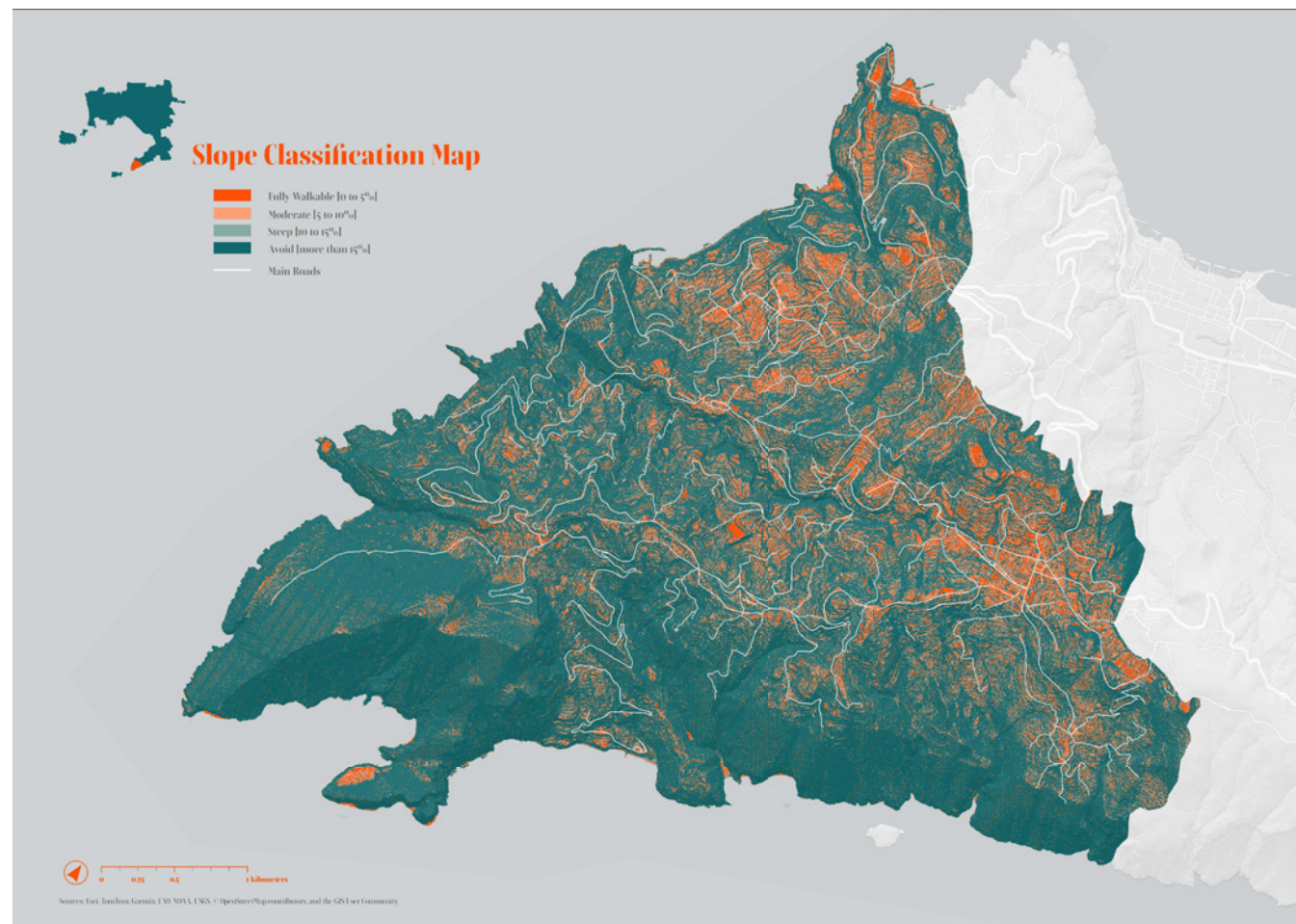


Figure 14 - Map of the slope classification in Massa Lubrense. Produced with ArcGIS Pro by the author

The map divide the territory in four classes : “To Avoid”, “Steep”, “Moderate”, and “Fully Walkable”. All of the classes corresponds to values related to the “percentage rise” of their portions, that range from 0 to more than 100. The maximum value remains not relevant, since a percentage rise exceeding 15, alters the walkability and cyclability. The classes have been defined as: from 0 to 5 “Fully Walk-

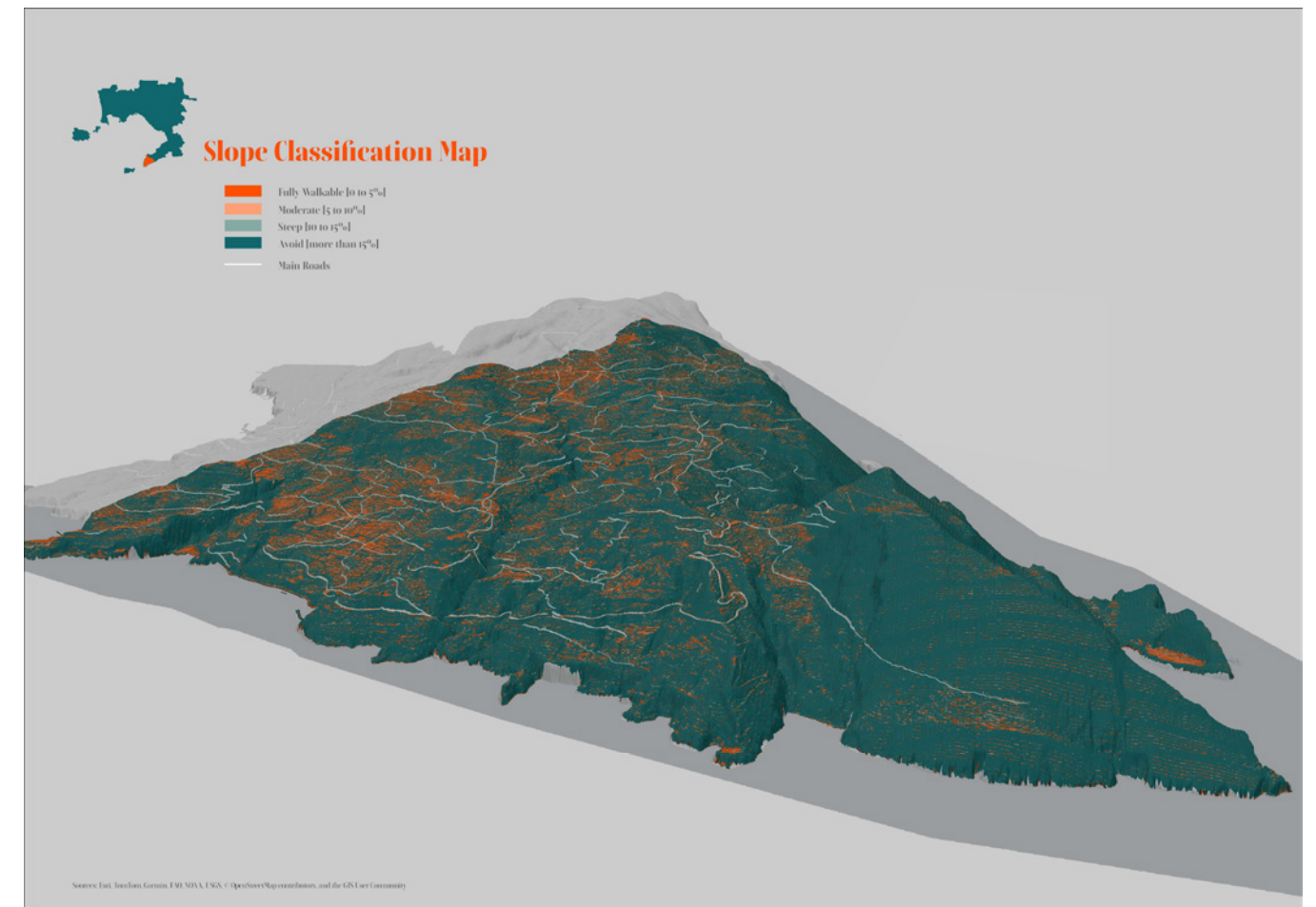


Figure 15 - 3D Map of the slope classification in Massa Lubrense. Produced with ArcGIS Pro by the author.

able”, 5 to 10 “Moderate”, 10 to 15 “Steep” and “To Avoid” for anything that is superior to 15 percent. The map illustrates most of the territory corresponding to the class “To Avoid”. The graph [Figure 16] confirms that 72,9 percent is included in this class, and just over 25 percent are accessible for pedestrian and bike use.

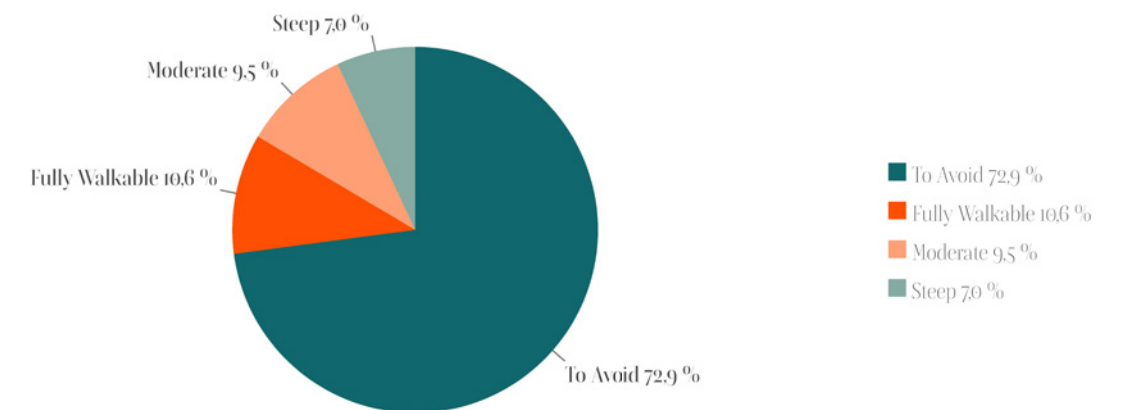


Figure 16 - Pie charts of the repartition of the Slope Class in Massa Lubrense. Produced by the author

Furthermore, the circulation network existing in the area shows limited inclusion of the pedestrian. The main user considered in the road network development has been the vehicle holders, and even on the shared roads the pedestrian is

not prioritized and by extension sometimes at risk.

To this end, the pedestrian accessibility map [Figure 18] showcases the constitution of that circulation network, focusing mainly on the pedestrian use. The roads are labelled as “Pedestrian only, Shared street and Motorized road”. On that map, the tracks and informal paths are included in the network, and make up most of the “Pedestrian only” category, which represents 28 percents of the roads. In contrary more than half of the network is dedicated to vehicules, while only 17 percent to shared-use.

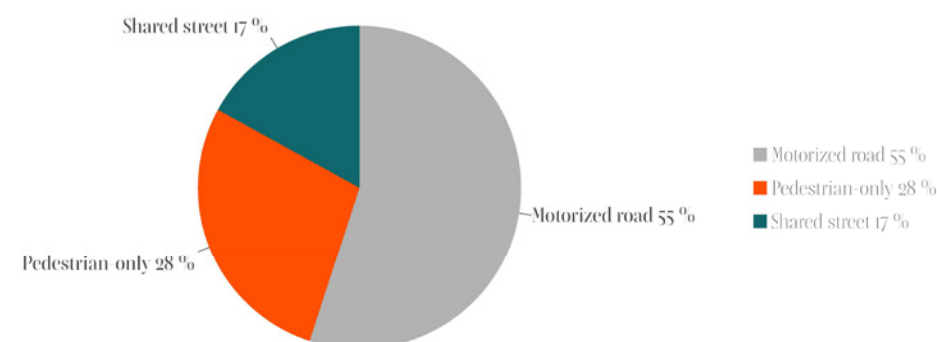


Figure 17 - Diagram of the percentage concerning the pedestrian accessibility in the territory of Massa Lubrense. Produced by the author

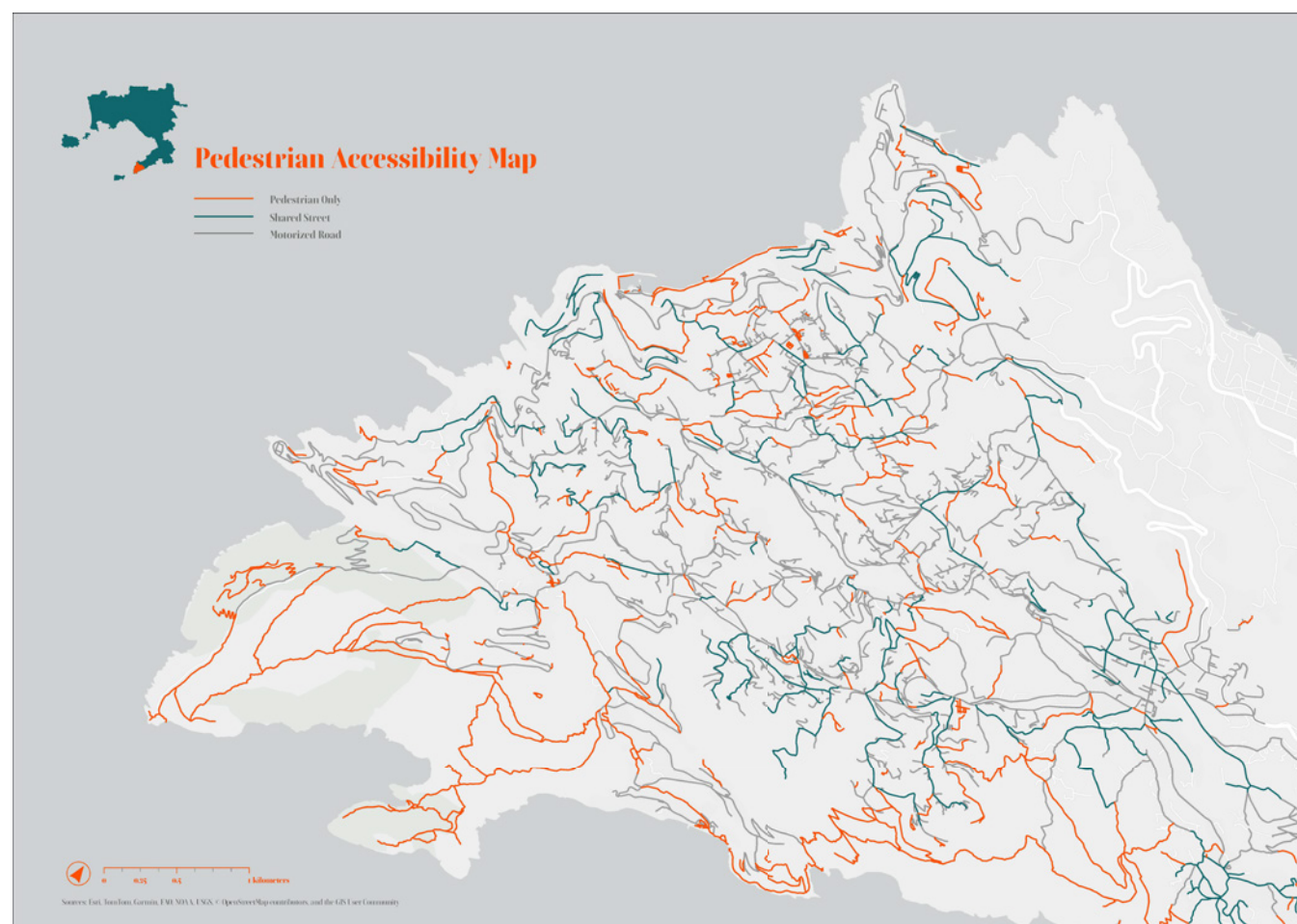


Figure 18 - Map of the road network highlighting the pedestrian accessibility. Produced with ArcGIS Pro by the author

Current State of the Towers

The actual level of conservation of the towers was investigated through on-site observation, which led to an assumed categorization of the ten buildings, to better manage the re-use intentions of this study. Five typologies have been identified:

- Destroyed/non-existing
- Severely ruined
- Partially preserved
- Well-preserved
- Currently in-use

Out of those five typologies, as part of this work, only the first four types were subjected to architectural interventions.

Destroyed/non-existing

This typology corresponds to the towers that had existed in their site, and are today still known as the former localization of one of the tower. The only traces that are remaining of such towers, are the historical sources or reports attesting their previous condition and location.

The only site within the territory of Massa Lubrense corresponding to that type is the Punta Vaccola. The former tower was abandoned after its decommissioning. Due to the presence of a limestone quarry in the surrounding, the blast from the mining activity caused the tower to collapse.



Figure 19 - View of Punta Vaccola, Google Earth Pro satellite image, accessed May 24, 2026.

Severely ruined

This category, corresponds to the towers that are currently standing, but are in a bad state of conservation. Those are the ones with missing portions, strongly

damaged facade, and partially collapsed wall.

Two towers are identified as severely ruined in Massa Lubrense; the tower of San Lorenzo, and the tower of Recommone. The former, the smallest tower of the peninsula, is located on the northern side of that region, was ruined before its decommission. Due to its proximity to the two towers of Punta Vaccola and Capo Corbo, San Lorenzo was abandoned since the area was already covered by the other two, despite being officially in commission. Thus, the climatic conditions led the tower to collapse, today being in ruin, while recognizable in shape.

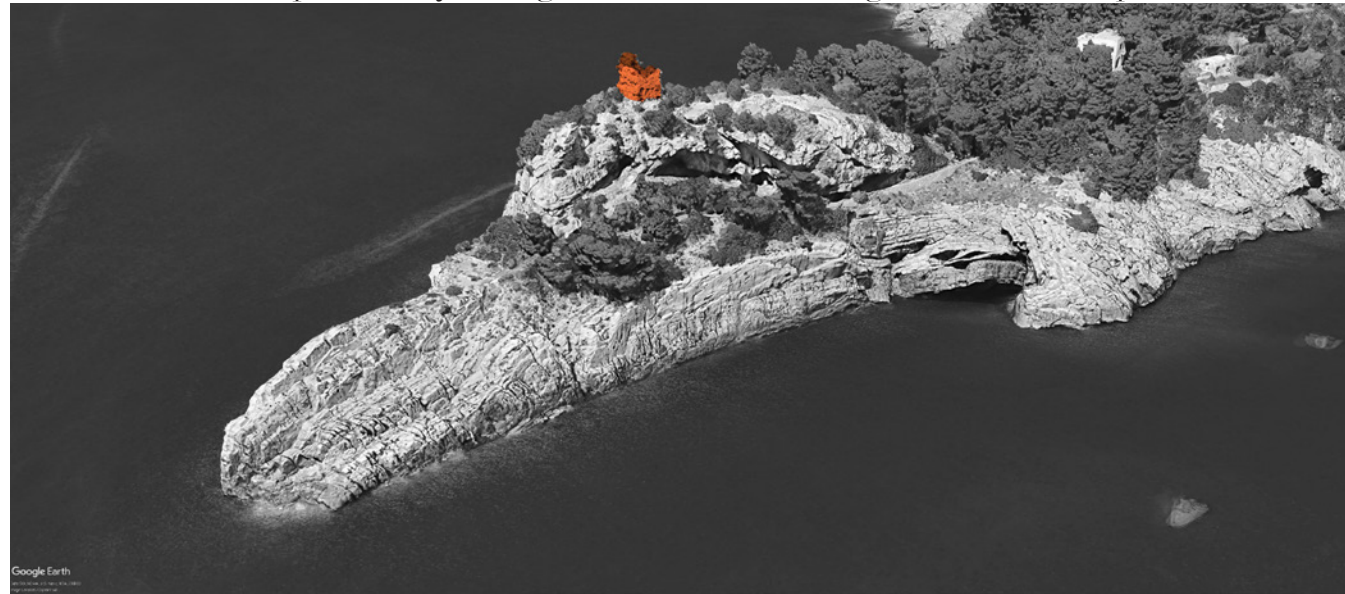


Figure 20 - Remains of Torre di San Lorenzo, Google Earth Pro satellite image, accessed May 24, 2026.

The latter, the tower of Recommone, is located on the south of the peninsula, close to the town of Nerano, within an area rich in vegetation, and trees used for the local agriculture production, such as olive and citrus trees_ mainly lemon. It has been built using limestone and gray Sorrento tuff. This stone being less du-



Figure 21 - The actual state of Torre di Recommone. Photographs by the author, acquired September 30th, 2025

rable and resistant than limestone, after the decommission of the tower, and the stop of use, led to a rapid deterioration of the masonry, accelerated by the growth of vegetation due to the context. With time, the major part of the battlement system collapsed, as well as the roofing and the staircase leading to the roof.

Partially preserved

Within that territory, this typology is the one that is encountered the most frequently. This represents the towers that are still existing with their complete shape. Some elements such as the battlement system collapsed over time, but the general shape of the tower is still the same as during the period of use. Those are the buildings that need a preservation and strengthening intervention, but they do not need to be rebuilt. The assumption can be made that the tower contained in the fifth typology were part of that category before their re-use.

Today, in Massa Lubrense, we can find three towers corresponding to the fourth category. The tower of Crapolla, first tower encountered on the coasts of the city, when coming from the Amalfi coast. It lays on the steepest topography compared to the rest of the towers. After its abandonment, the conservation condition worsened, considering the climatic condition and the salt. Although the damages are present, the shape remains mostly intact, with the partial collapse of relatively light portions, such as its battlement. It is now considered essential to consolidate and restore the tower to prevent its eventual loss.

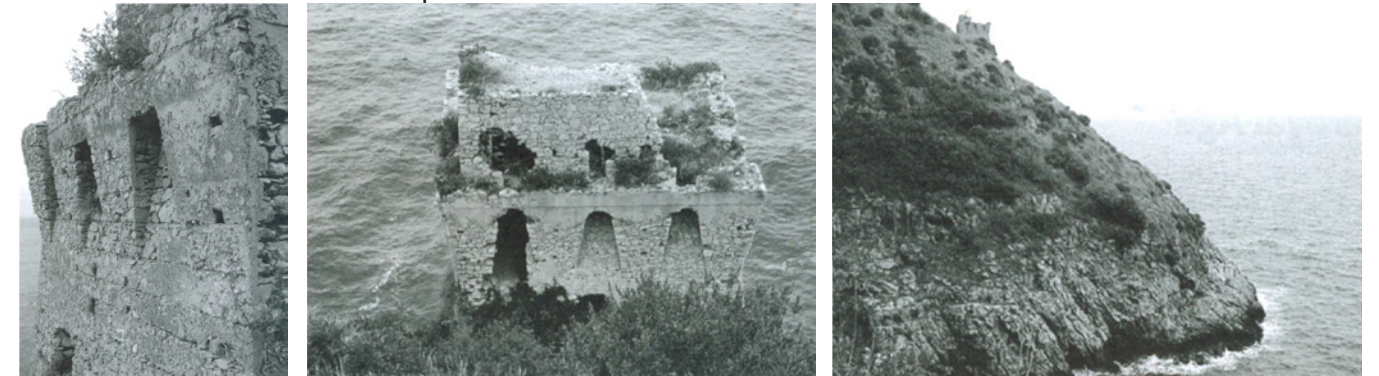


Figure 22 - The actual state of Torre di Crapolla. Photographs by Francesco Delizia, From Russo, Valentina, *Landscape as Architecture: Identity and Conservation of Crapolla Cultural Site*, 2014, p124-126

The tower of Montalto, since 1985, has been a property of the *Fondo per l'Ambiente Italiano* (FAI), as part of the Baia di Ieranto, covering the whole southern west end



Figure 23 - The actual state of Torre di Montalto. Photographs by the author, acquired October 2nd, 2025

of Sorrento. Due to a lack of maintenance, some part of the battlement system collapsed, the shape of the tower remained intact, as well as the good state of the openings. Its states of conservation is similar to that of Crapolla. It has been designated as a Sinto d'Interesse Comunitario.

Just next to the Baia di Ieranto, at the geographic end of the peninsula, is located Punta Campanella, on which the Tower of Minerva lays. Minerva was functioning the longest amount of time compared to the rest of the towers in the region. After being abandoned, it started to fall into ruins, with the complete collapse of the battlement system. Unlike Montalto, the openings were mostly collapsed, while the overall shape of the structure stayed intact.



Figure 24 - The actual state of Torre Minerva. Photographs provided by ReUse Italy Competition, in the context of the ReUse the Tower Competition of Idea

Well preserved

This state of conservation is attributed to the towers that appear not damaged at all. Only one tower correspond to that typology, called Capo di Massa. Thanks to



Figure 25 -View of Torre di Capo di Massa. Google Earth Pro satellite image, accessed May 24, 2026.

a reinforcement of the vaulted ceiling of the ground floor, that preserved that floor from collapsing, this tower is in a good state of conservation. Thanks to works of restoration and conservation, Capo di Massa looks untouched by the passing of time, with the intact opening of the windows and the complete shape of the tower.

Currently in-use

This last state of conservation is the one that corresponds to the towers that are owned by private owners, and were restored in order to introduce a new function in them. Their state of conservation appears impeccable since they are in-use. Three of the tower in Massa Lubrense lie within this category, re-used for same activities, as unique holiday accommodation for tourist. Fossa di Papa, today within an agrotourism complex, the tower of Nerano, part of the Village Camping Nettuno, and lastly, Torre di Capo Corbo situated in a touristic complex.



Figure 26 - Torre di Fossa di Papa. Photograph by the owner. ALBELI RENTALS, Torre Punta Campanella. Accessed on May 24, 2026. <https://albeli.it/rentals/torre-punta-campanella/gallery>



Figure 27 - Torre Nerano within the Camping Nettuno. Photograph by the author. Acquired October 1st, 2025

The first two were restored mainly on their facade and with a reorganization of the interior. In the case of Capo Corbo, the guardhouse was expanded in order to create a bigger residential building. The intervention was made in a way that the



Figure 28 - View of Torre di Capo Corbo. Google Earth Pro satellite image, accessed May 24, 2026.

tower would be identifiable as it was.

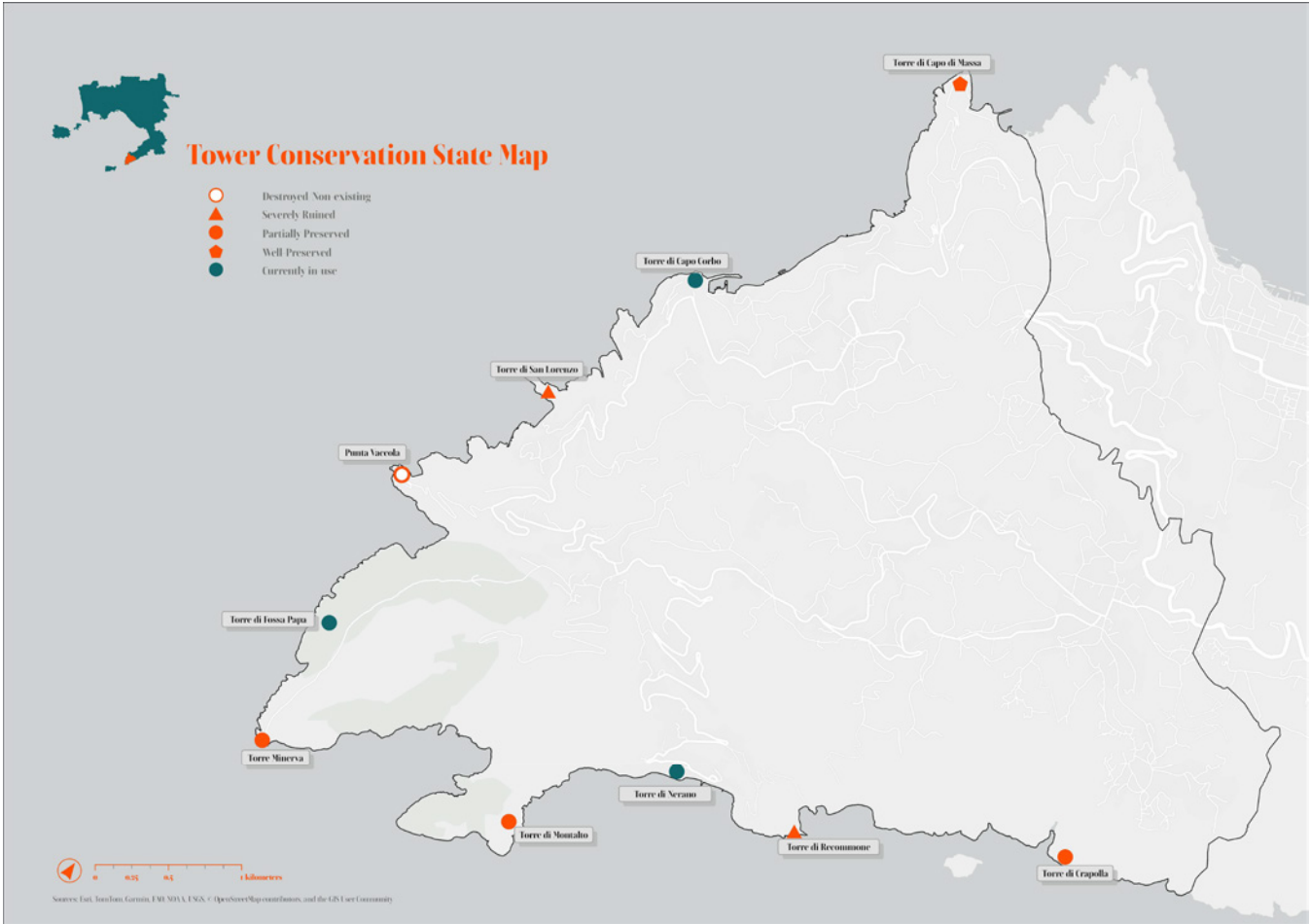


Figure 29 -Map of the conservation state of the watchtower of Massa Lubrense. Produced with ArcGIS Pro by the author

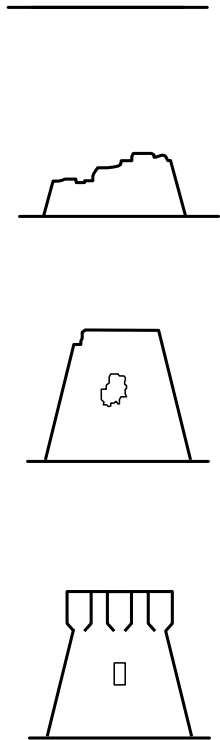
Today, not all of those towers are accessible, since most of them belong to a private owner. The only two towers that are under the public domain are Torre Minerva and Torre di Crapolla. Some of the towers owned by private owners can still be seen, and some, can be approached. We can note, for instance, that until 2020, at the beginning of the lock-down due to the COVID-19, FAI was organizing some visits of the interior of Torre di Montalto. In the case of Torre di Recommone, the tower is a private property, however, it is possible to access it thanks to its location on a coastal track. The towers that are not open to public, are the ones belonging to private owners using them, while possible to visit in case of registering. The only tower that is nowadays completely inaccessible is Torre di San Lorenzo, which is also the most damaged one, located at the end of a earth brace on the see, in the middle of an area with only stone and trees, there is no proper path existing anymore to access to it. This is due to a conflict between the owner of the tower and the town mayor, leading to the enclosure of the path, formerly accessible to the publicⁱⁱ.

As part of this thesis, the intervention was focused on the towers that are accessible and are not currently used by their owner. Consequently, this work will showcase four interventions, one per typology of tower, in order to show the possi-

ii. Information acquired from the interview with Domenico Palumbo, vice president of the Archeoclub of Massa Lubrense.

ble answer to each of the typologies. The solutions were realized and designed in a way that allowed their application with ease on the tower of the same type. The selected four towers are:

- Torre di Punta Vaccola - Destroyed/Non existing
- Torre di Recommone - Severely ruined
- Torre di Minerva - Partially preserved
- Torre di Capo di Massa - Well preserved.



A collection of relevant inspiration to this thesis has been explained in this chapter. Case studies of different scale, typology, and location were gathered and analyzed to aid the creation of the project in a more critical manner. These examples were chosen regarding their connection of cultural landmarks, implementation of low-impact choices, path adaptation to the topographies, and design of routes for various users.

III.

Case Studies

Analysis of
Leisure and
Sport-Oriented
Pathways

Case studies localisations

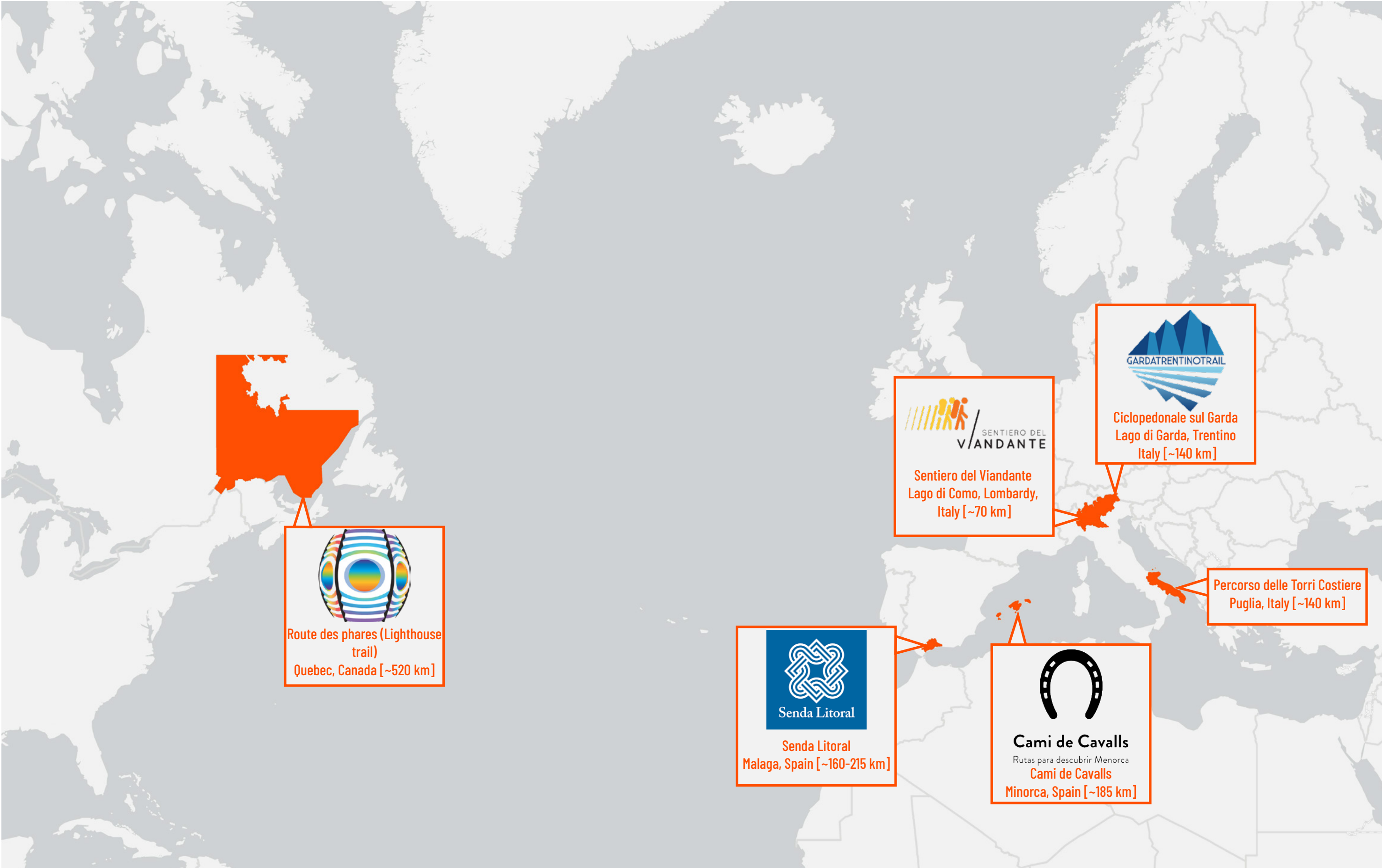


Figure 30 -Map of the localization of the case studies. Produced with ArcGIS Pro by the author.

Camí de Cavalls - Menorca, Spain



Figure 31 - Photographs of the Camí de Cavalls. Photographs A and C by Alejandro Muñoz Cabrias, B by Discasto. Wikipedia - Camí de Cavalls. Accessed on November 15, 2025. https://en.wikipedia.org/wiki/Cam%C3%AD_de_Cavalls

The Camí de Cavalls is a former military coastal path that has been re-stored as a continuous heritage corridor linking beaches, cliffs, archaeological sites, and defense watchtowers. This network is being connected by twenty stages proper for walking, cycling, and horseback riding. Noteworthy is the management focus on the erosion control of the area, in addition to the regular maintenance, proper visitor infrastructure, and balanced long-distance path with local segments.

Relevance:

In spite of the resemblance of Camí de Cavalls to the current study in Massa Lubrense, this path sets an example on how a continuous route can be acquired by providing new segments designed in case of steep terrains or improper routes. Furthermore, the non-invasive infrastructure design of the project, showcasing minimal wooden elements appropriately located along the paths, is an important factor in sustainable path creation.

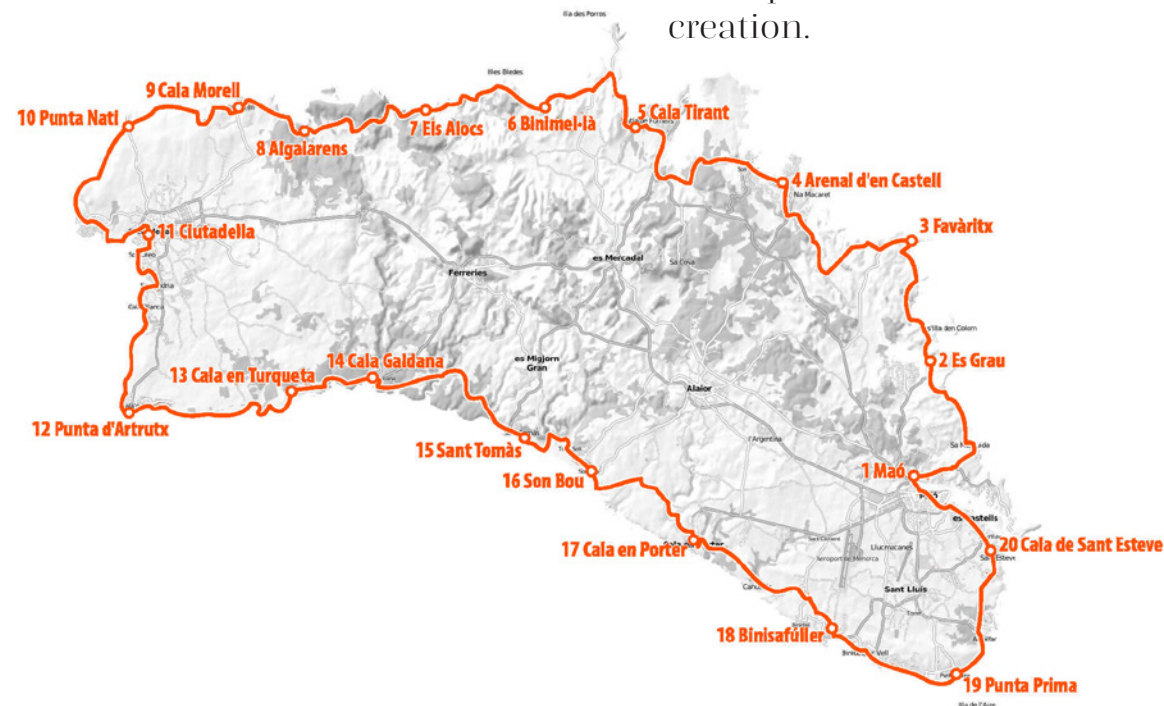


Figure 32 - Map of the Camí de Cavalls, Minorena, Spain. Villa Etnia - Camí de Cavalls. Accessed on November 22, 2025. <https://villasetnia.es/fr/cami-de-cavalls/> Recolored by the author.

Málaga Coastal Path (Senda Litoral / GR-249) - Province of Málaga, Spain

The Senda Litoral de Málaga (part of the wider GR-249 and provincial coastal network) is an evolving coastal route that aims to connect the entire Málaga coastline with a continuous path for walking, cycling and marine recreation. The project is ongoing, with approximately 80 percent of the path available to hikers.

Relevance:

The significant points to be noted from this project is the emphasis on the multi lanes of the path for different users when walking, cycling, aquatic itineraries, and local tourism promotion. The path are well preserved with hardened boardwalks, or low-impact footpaths, together with viewpoints and signage. This path is exemplary in bringing together different coastal entities, as one heritage route.



Figure 34 - Photographs of the Malaga Coastal Path. chilitri. Accessed November 15, 2025. <https://www.chilitri.com/blog/karenparnell01@hotmail.com/exploring-the-senda-litoral-on-foot-a-200-kilometre-coastal-adventure-on-spain-s-costa-del-sol>

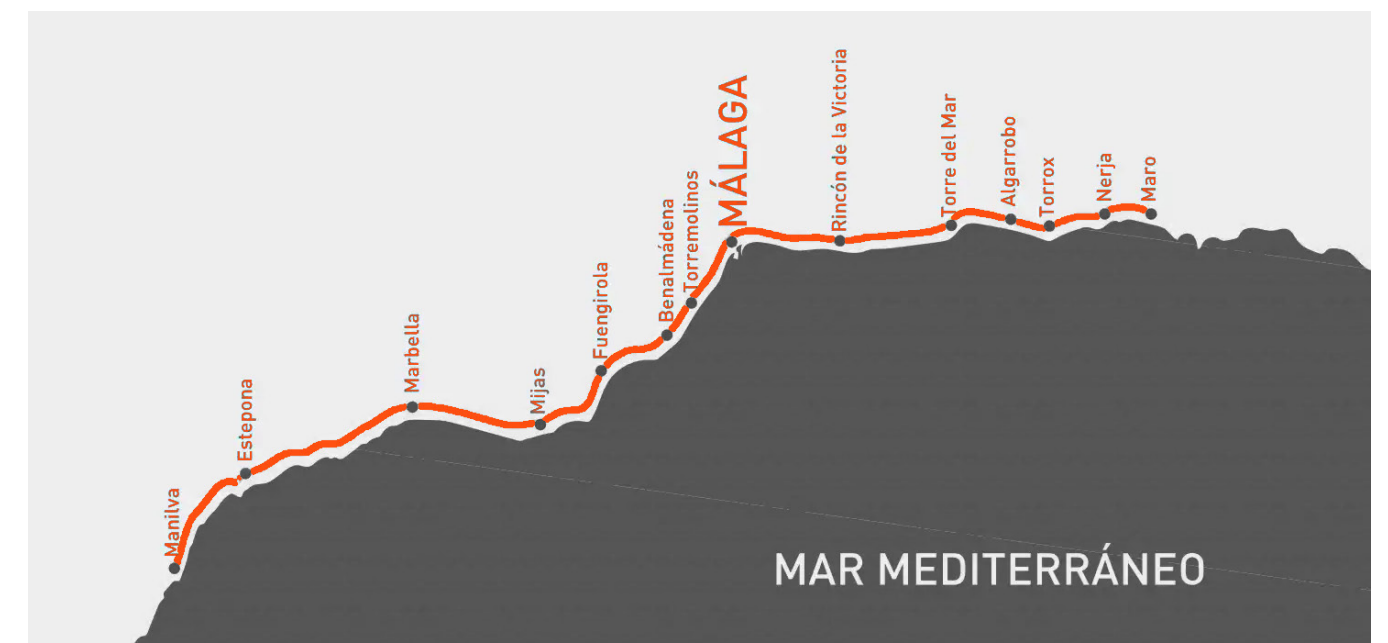


Figure 33 - Map of the Malaga Coastal Path (Senda Litoral / GR-249), Province of Malaga, Spain. Senda Litoral. <https://www.sendalitoral.es/en/> Recolored by the author.

Lighthouse Trail / Sentier des phares - Quebec Maritime, Canada



Figure 36 - Photographs of the Lighthouse Trail *Québec Maritime*. Accessed November 15, 2025. <https://www.quebecmaritime.ca/en/road-trips-and-getaways/the-lighthouse-trail>

The trail connecting the lighthouses in the Quebec Maritime region (Gulf of St. Lawrence / Gaspé Peninsula), also known as the Sentier des phares, is a large scale project, generally intended for vehicles, which constitutes attribution of various functions to the heritage lighthouses. These points of attraction located on the Route 132 and the Gaspé coast, present how dispersed maritime heritage can be re-used into a linear tourism activity.

Relevance:

A key lesson from the Quebec trail is the inclusion of different use, from lighthouse B&Bs, to museums, exhibitions, and viewpoints. Detailed brochures for self-guided tours, is an additional useful factor to be taken into consideration.

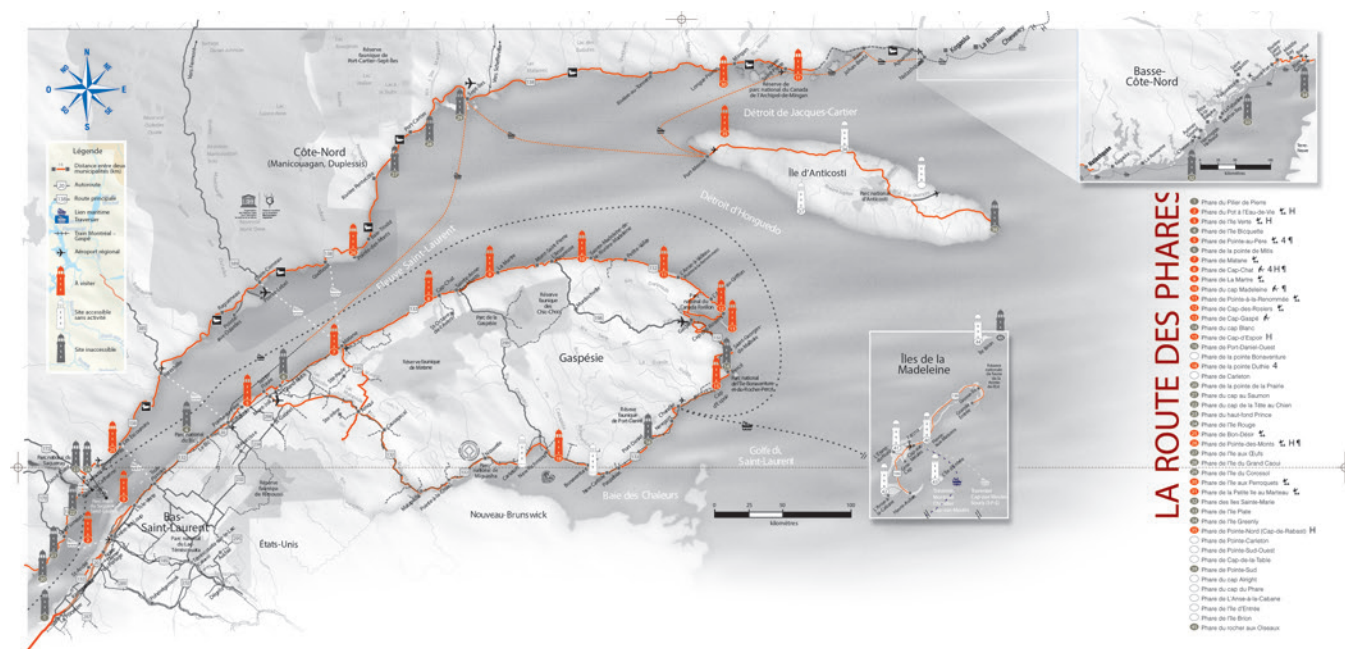


Figure 35 - Map of the Lighthouse trail / Sentier des phares, Quebec Maritime, Canada. *Quebec Maritime - La Route des Phares*. Accessed on November 25, 2025. <https://www.quebecmaritime.ca/circuits-et-sejours/la-route-des-phares> Recolored by the author

Sentiero del Viandante - Lago di Como, Lombardia, Italia

The 14-stages path of Sentiero del Viandante, also called as wayfarer's path follows an ancient mule walkway along the eastern coast of Lake Como. This project is a relatively smaller scale community-oriented approach connecting villages, medieval chapels, ancient stone houses, and historical stones.

Relevance:

This project illustrates a model for re-purposing for cultural tourism. Furthermore, the connectivity of this route to the public transportation, Lecce-Colico railway, at several points makes the journey more flexible for the user in case of backtracking.

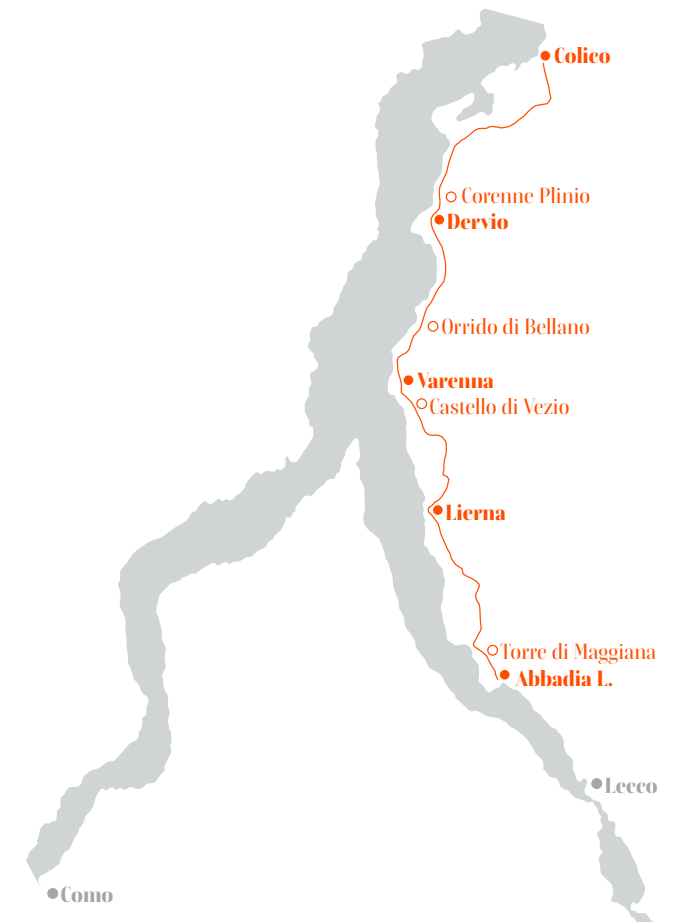


Figure 37 - Map of the Sentiero del Viandante, Lago di Como, Lombardia, Italy. *Compagnia dei Cammini*. Accessed on November 25, 2025. <https://www.cammini.eu/viaggi/sentiero-del-viandante-lombardia/> Redrawn by the author

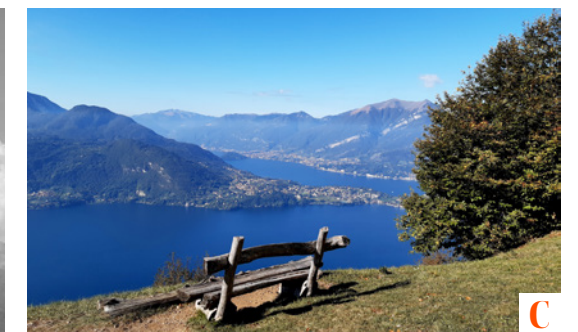


Figure 38 - Photographs of the Sentiero del Viandante. Photographs A and B from *Il Sentiero del Viandante*. Accessed November 15, 2025. <https://www.ilsentierodelviandante.eu/en/tappe/>. Photographs C and D from *Cammini*. Accessed November 15, 2025. <https://www.cammini.eu/en/travels/sentiero-del-viandante-lombardia/>

Percorso delle Torri Costiere - Puglia, Italy



Figure 39 - Map of the Percorsi delle Torri Costiere, Puglia, Italy. From S.Camagni and E. De Donno *Trekking delle Torri Costiere in Salento vol.1 atlante*, 2022. Recolored by the author.

Relevance:

Architecturally speaking, the non-invasive intervention is a factor to be noticed, as well as how such project can result in heritage valorization and tourism activation.



Figure 40 - Photographs of the tower on the Percorso delle Torri Costiere. Photograph A from *Peschici - Monte Pucci Tower. Le Strade del Vino Puglia*. Accessed November 15, 2025. <https://lestradedelvinopuglia.com/tra-le-torri-costiere/> Photograph B by Andrea Giorgio. *Le Meraviglie del Salento (Facebook)*. Accessed November 15, 2025. <https://www.facebook.com/lemeravigliedel/posts/puglia-salentotorre-colimena-manduria-taandrea-giorgio/929099745888077/>

Garda Trentino - Limone sul Garda - Riva del Garda section - Lago di Garda, Trentino, Italy

This path is a bike line, surrounding the Lago di Garda. Different portions are constituting it and represent a track between mountainous landscape and a water body. The most interesting section in the context of that work is the portion between Limone sul Garda to Riva del Garda. This section is constituted by suspended metal and wood bike track, made by a structure appearing light and almost vanishing in the landscape. It is also interesting from its multi-user point of view.



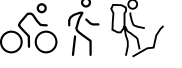
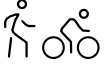
Figure 41 - Map of the Bike Lane on Lago di Garda, Lombardia, Veneto, Trentino-Alto Adige, Italy. *Radreisen eurocycle*. Accessed on November 24, 2025. <https://www.radreisen.at/italien/rundfahrt/rund-um-den-gardasee> Recolored by the author.

Relevance:

The landscape and the topographical conditions, similar to that of Massa Lubrense, are relevant in terms of the structural solution chosen in the case study [Figure 42].



Figure 42 - Photographs of Limone Sul Garda Bike Path. Photograph A from *Visit Limone sul Garda*. Accessed November 15, 2025. <https://www.visitlimonesulgarda.com/it/cosa-fare-limone-garda.htm> Photograph B from *AllTrails*. Accessed November 15, 2025. <https://www.alltrails.com/trail/italy/lombardy/ciclopista-dal-garda-limone-del-garda-trento-confine>

Project	Location	Scale	Territorial Context	Path Typology	Mode of Commute	Signage	Relevance
Cami de Cavalls Menorca, Balearic Islands, Spain		~ 185 km In 20 stages	Coastal cliffs, dunes, Mediterranean pine forest, agricultural land	Beaches Cliffs Watchtowers Formerly defense points			Exemple on how a con- tinuous route can be acquired by providing new segment designed in case of steep terrains or improper routes.
Senda Litoral (Málaga Coasta Path) Province of Málaga, Andalusia, Spain		~ 160–213 km Depending on routing and coastal extensions of GR-249	Urban waterfront, mari- na promenades, beach fronts, coastal cliffs,	Promenades, Beaches Marinas Historic watch-towers (42 “Almenara” towers)			Emphasis on the multila- nes of the path for differ- ent users.
Lighthouse Trail (La Route des Phares) Québec Maritime region, Canada (Gulf of St. Lawrence / Gaspé Peninsula)		~ 520 km Road & maritime tour	Rocky coastline, islands, sea cliffs, rural maritime landscapes, marine park zones	Historic lighthouses Maritime heritage sites Coastal viewpoints Islands			Inclusions of different functions.
Sentiero del Viandante Lake Como, Italy		~ 70 km In 14 stages	Lake shore, moun- tain slopes, terraced landscape, rocky cliffs, panoramic viewpoint	Historic mule tracks Lake side trail Medieval villages Pilgrimage route section Scenic viewpoints Rural settlements			Model for repurposing for cultural tourism.
Percorso delle Torri Costiere Puglia, Italy		~ 5-15 km Per segment	Rocky coastline, coastal cliffs, agricultural lands, marine environment	Coastal watchtowers Defensive heritage Clifftop path Coastal viewpoint Beaches and coves Archaeological remains			Tourism activation and heritage valorisation.
Limone sul Garda (Bike on Lake Garda) Trentino, Italy		~ 142 km	Lake shore towns, river valley, vineyards	Lake shore			Structural solution re- garding the topography.

The sustainable path has been developed through a GIS process, taking into account the territorial factors present in the sites, as decisive criteria for the creation of the route. To begin with, the path has been acquired manually, regardless of the digital approach, to highlight the limitations of such methodology. Subsequently, a data acquisition, preparation, and interpretation, was the fundamental procedure allowing a GIS-based investigation of a sustainable route. With this inventory prepared, through the use of Arc GIS Pro software, final results were illustrated as maps identifying the desired path.

IV. Sustainable Path Development

Manual Path Creation: Methodology and Limitations

Prior to the GIS-based analysis, the manual path creation was undertaken to highlight an intuitive exploration of the routes connecting the watchtowers. This preliminary process is based on analyzing the satellite imagery, followed by a field survey. The on-site observations allowed for better understanding of the morphology of the territory, and the accessibility situation.

This initial path was drawn manually on Google Earth Pro by tracing the path between the watchtowers through visual interpretation using the Placemark and Path tools¹², using the existing walkable, and identifiable paths from the satellite view [Figure 43]. Priority was given to the easiest routes to identify, seem-



Figure 43 - Manual Path Drawing on Google Earth Pro.

ingly accessible, and preferably representing the shortest distance between the towers. Essentially, this procedure assisted an understanding of the connectivity of the sites, the approximate distances between them, and the characteristics of the landscape. The total length of the path was measured 37.53 kilometers, partitioned between each closest towers, from Torre di Capo di Massa to Torre di Capo Corbo, the distance was recorded thanks to Google Earth Pro's Path tool 5.12 kilo-

¹². The Placemark tool in Google Earth Pro is used in order to save places as point of interest. In the case of that work, the tool has been used in order to identify the position of the different towers located within the path. The Path tool in Google Earth Pro allows the user to highlight and get informations from linear features, it has been used in this work in order to get the distance within the different tower and to draw the path identified through visual interpretation of the aerial view.

meters, from Capo di Corbo to San Lorenzo 2.48 kilometers, 3.96 kilometers from San Lorenzo to Punta Vaccola. The next segment starting in Punta Vaccola going to Fossa di Papa represented 6.17 kilometers, then moving to Torre Minerva with a distance of 1.44 kilometers. The next segment, from Minerva to Montalto, was the longest distance recorded within the path with 7.16 kilometers. From Torre di Montalto to Torre Nerano, the length was reported as 3.71 kilometers. The next portion was the portion of the path passing the closest to the littoral, as well as the shortest with a length of 1.1 kilometer linking Nerano to Torre di Recommone. The last segment from Recommone to Torre di Crapolla, ended the path with a measure of 6.39 kilometers.

Such distances came in as a preliminary decisive factor on considering the user's experiences and needs. Additionally, thanks to the territorial analysis of the sites [see Chapter 2 "Context"], and their proximity to the strategic points of the region, considerations were made in anticipation to the actual project development, and potential function of each tower.

However, this manual analysis contained several limitations, due to its realization by visual interpretation, the relatively low level of detail of the satellite view and the presence of shadow, vegetation and topography made the interpretation incomplete. Unclear path continuity, caused uncertainties regarding the safety or walkability of the road for the user; the lack of precise topographic information, together with uncertain land-use made it difficult to validate selection of particular segments. Consequently, the process turned out, to some extent, subjective, which resulted in a complementary on-site visit to increase the reliability of this manual analysis. That on-site visit has been carried from the 28th of September 2025 to the 2nd of October 2025. It has been carried out mainly by walking the overall site, by trying to follow the preemptively identified paths, to verify the feasibility of that previously drawn path. During that visit some tools has been employed in order to facilitate and organise the work, such as Mapillary and some maps of the existing hiking trails.

The in-person observations concluded a high number of road segments not fully safe for pedestrian users due to vehicular passages. In case of bus passing on narrow streets, the on-foot commute appeared highly dangerous amplified by the low visual accessibility considering the sharp curves existing in the territory. Such limited sight for any typology of commute, forced the drivers to honk to notify the opposing body of their presence. Additional findings included the online suggested paths to be taken during the journey, while the respective road could not be found in presence at the location were indicated on the online resources.

Such experiential data were recorded on Mapillary. Due to the limitation on the duration of the survey, only three fragments were recorded; a partial fragment leading to Torre di Montalto, the distance between the city center to Torre di Recommone, and the distance from Torre di Recommone to Torre di Nerano, the latter was acquired in several separated takes due to a lack of equipment and the need to take picture at the same time with the same device as the one used for the acquisition.



Figure 44 - Mapillary acquisition of the path to Torre di Recommone then to Torre Nerano



Figure 45 - Mapillary acquisition of the path to Torre di Montalto

An example of the aforementioned incoherence between the online data and on-site observations, was seen along the way to Montalto, in which the suggested path on the Maps could not be found. One path, represented in orange on Figure 46, was indicated on the map within Mapillary Figure 46A, but was inaccessible in person, as highlighted on the picture and on the map, the path that has been fol-

lowed was the one drawn with a blue dotted line. This example of incoherency, as well as others noticed during the site visit are highlighting the lack of precision and reliability of the manual method.

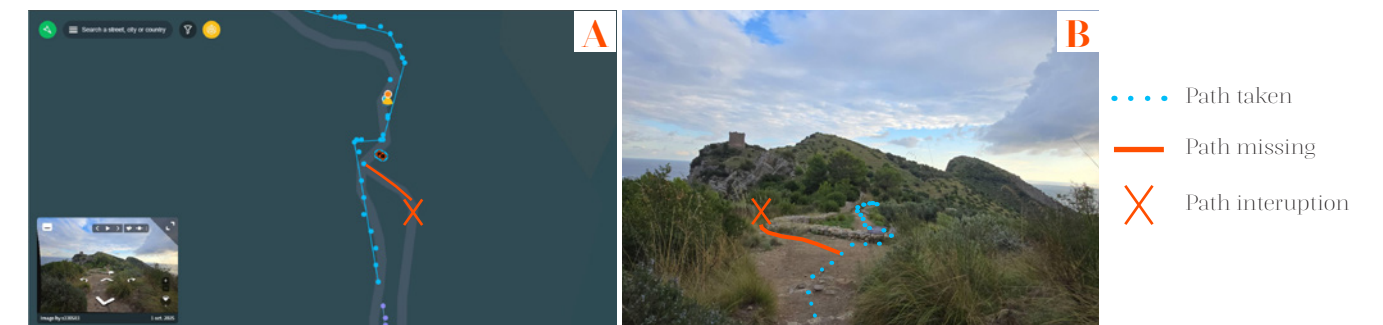


Figure 46 - Highlight of the missing path

Data-Driven Path Creation: GIS Methodology

Although the site visit strengthened the manual proposal, it also reinforced the necessity for a more objective and reproducible analytical method, leading to the subsequent GIS-based process. The GIS process consisted first of acquiring the necessary data and information relevant to our purpose, in this case the data needed were the geographic informations concerning the towers, informations and shape-file for the roads, and finally, some topographic informations. Each of those layers has been analyzed and prepared in consideration of the final desired outcome.

The site visit highlighted crucial factors to be taken into account, such as the pedestrian safety issue on the roads. This led to the conclusion that the safest way to travel this path, in those portions would be by bike instead of walking. That conclusion for example, required a particular attention during the data analysis and processing in order to take into consideration all relevant factors. This data preparation was carried out in order to realized a proper dataset to be able to realise a Network Analysis.

The Network Analysis (NA) is a tool within ArcGIS giving the possibility to obtain the most favorable path thanks to the anterior preparation of the used layer, by considering and setting up parameters and factors affecting the outcome. In the case of this work, this tool has been used in order to create a path, intended to be mainly for bike user with pedestrian sections to access the area that are inaccessible by bike. In those case, the user should backtrack the path to take their bike back and continue the path. Thus, this methodology included two steps of producing the desired path for cycling, and walking, which was compared and combined resulting in a final map that illustrated the best fitting path for both users.

Dataset	Description	Metadata
Transportation Network	Road network data of Massa Lubrense	Title: Massa Lubrense transportation network data Source: OpenStreetMap (via Overpass Turbo query) Date Accessed: July 4, 2025 Format: GeoJSON Nominal Scale: City level street mapping Coordinate system: WGS 1984 UTM Zone 33N URL: https://overpass-turbo.eu/index.html
DTM 1m x 1m	Digital Terrain Model of the inland of Massa Lubrense territory	Title: DTM 1 meter x 1 meter - Inland Massa Lubrense Source: Ministero dell'Ambiente e delle Sicurezza Energetica (MASE) Date Accessed: October 15, 2025 Format: TIFF Nominal Scale: 1:2000 Coordinate system: GCS_WGS_1984 URL: https://sim.mase.gov.it/portalediaccesso/mappe/#/viewer/new
DTM 2m x 2m	Digital Terrain Model of the coast of Massa Lubrense territory	Title: DTM 2 meter x 2 meter - Coast Massa Lubrense Source: Ministero dell'Ambiente e delle Sicurezza Energetica (MASE) Date Accessed: October 15, 2025 Format: TIFF Nominal Scale: 1:4000 Coordinate system: GCS_WGS_1984 URL: https://sim.mase.gov.it/portalediaccesso/mappe/#/viewer/new

Figure 48 - Summary Table of Datasets

The path of this project being intended to revive and to link the viceroys tower, the geographic informations of those towers needed to be compiled and treated. An Excel table [Figure 51] has been realised to compile the relevant informations, such as the names, the years of constructions, the accessibility, the geographic coordinates to implement those informations within the GIS environment. This table is also including two points of interest, Castello dell'Annunziata and Torione Villarca in addition to the watchtowers in order to include them within the tracing of the path considering their territorial and historical relevance. This table has then been imported within ArcGIS in order to turn those informations into points, used later as stops within the Network Analysis.



Figure 47 - Schematic workflow of the treatment of the geographic data for the towers to obtain their location points in ArcGIS Pro

To be able to consider properly the territory and the methods that will be employed in order to create the path, some more territorial data are necessary. These data are mainly, the terrain and topographical geographic informations and the road network of the territory.

The topography of the municipality of Massa Lubrense varying from 0 to approximately 530 meters of altitude, most of the roads and tracks within the territory are going uphill or downhill. In order to identify and to consider those parameters, the Digital Terrain Models (DTM) of Massa Lubrense has been analysed and informations has been extracted to understand better the repartitions of the heights within that area. The DTMs obtained beforehand has been resampled, due to the fact that their grid spacing equals 1 meter x 1 meter for the inland portions and 2 meter x 2 meter for the coastal ones. Those DTM acquired on the portal of the Ministero dell'Ambiente e della Sicurezza Energetica (MASE), on which the national archive is assembled of datasets with different resolutions, probably due to the date of acquisition of those datasets. This resampling allowed the combination of all the portions of the territory necessary for the analysis by using the tool “Mosaic to New Raster”. This new raster as been projected to the coordinate system of the project. This final DTM has been processed though a tool “Slope” in order to obtain the slope percentage within the territory of Massa Lubrense. Those percentage has then been used in order to add the topographic values to the road layer.

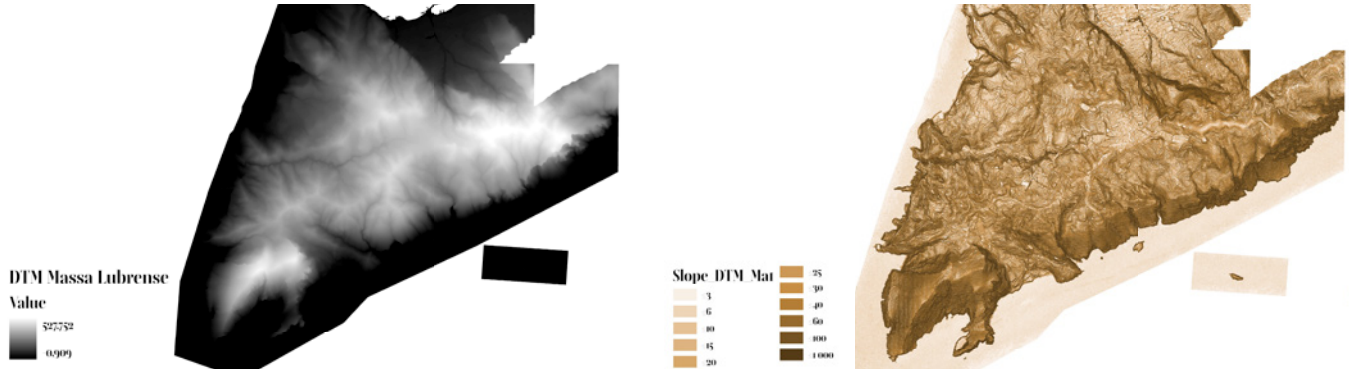


Figure 49 - Digital Terrain Model before and after processing. On the left, DTM obtained on the portale of MASE, on the right: image of the Slope percentage extracted from the original DTM.

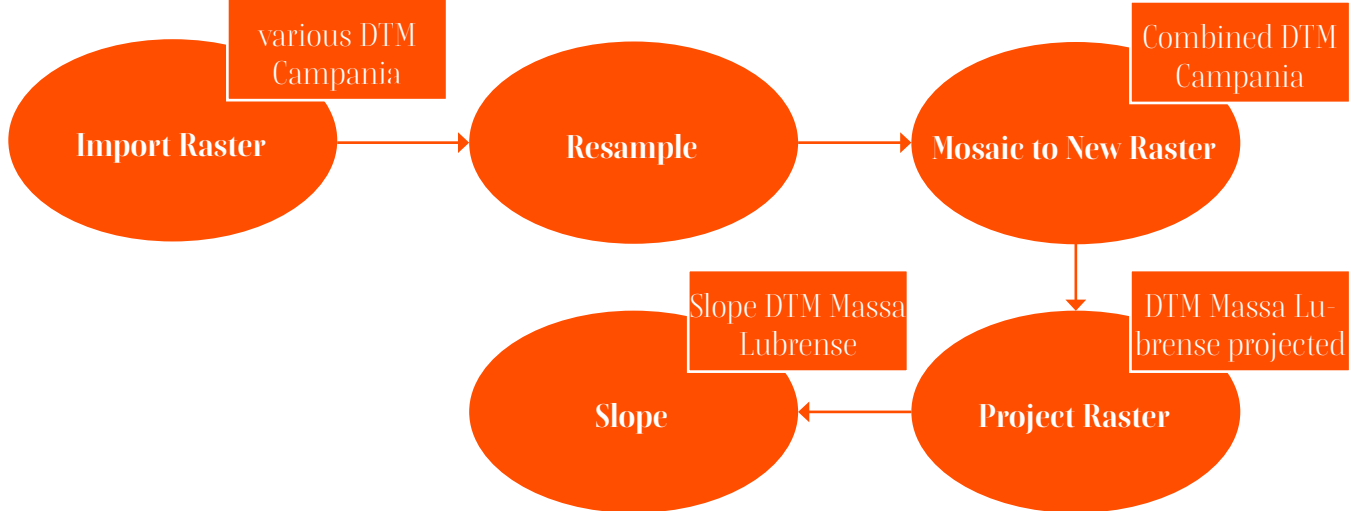


Figure 50 - Schematic workflow of the extraction of the slope information from the Digital Terrain Models

ID	Name	Alternative Names	Building Type	Year of Construction	Tower Type [No Corbels per side]	Address	Ownership Status	Accessibility	Current Use	Existence	Project	Latitude	Longitude
1	Torre di Capo di Massa	Torre di Capo di Villazono	Tower	XVIII century	One Corbel	NA	Private	Y	NA	Y	Y	40.6272	14.3998
2	Torre di Capo Corvo	Torre di Capo Corvo Torre La Mena Torre di Marina della Lobra	Tower	XVIII century	Four Corbels	Via V. Saverio, 36, 80069 Massa Lubrense	Private	N	Part of a tourist resort	Y	N	40.6789	14.3975
3	Torre di San Lorenzo		Tower	XVIII century	NA	NA	Private	N	Owned by a private owner (unlabeled and abandoned to destruction).	Y	N	40.5974	14.3922
4	Torre Vecchia	Torre Vecchia Torre Vecchia Torre di Punta Isacchi	Tower	XVIII century	NA	NA	NA	Y	Abandoned	N	Y	40.5872	14.3953
5	Torre di Iossa di Papa	Torre della papera	Tower	XVIII century	Three Corbels	Via Minerva, 80069 Massa Lubrense	Private	N	Agrotourism Company	Y	N	40.5773	14.3968
6	Torre Minerva	Torre di Punta Campanella	Tower	September 13, 1536	Five Corbels	Via Minerva, 80069 Massa Lubrense	Public	Y	Unlabeled and abandoned to destruction.	Y	Y	40.5946	14.3925
7	Torre di Montalto	Torre della Morchia Torre di Ierano	Tower	XVIII century	Three Corbels	NA	Private	Y	Unlabeled and property of EAL Interior visits until 2022.	Y	Y	40.5743	14.3480
8	Torre di Verrano	Torre alla Marina del Canione Torre di Canione	Tower	1558	Three Corbels	Sorrento coast Via Amerigo Vesputri, 39, 80067 Verrano	Private	Y	Part of a camping Village	Y	Y	40.5862	14.3530
9	Torre di Roccamare	Torre di Roccamare Torre di Roccamare Torre di Roccamare	Tower	1567	Three Corbels	NA	Private	Y	Owned by a private owner (unlabeled and abandoned to destruction).	Y	Y	40.5889	14.3840
10	Torre di Capolla	Torre di San Pietro ad Capona	Tower	From 1567	Three Corbels	NA	Public	Y	Unlabeled and abandoned to destruction.	Y	Y	40.5920	14.3893
11	Castello dell'Annunziata		Castle	1564 to 1636	NA		Public	Y	Municipality property. Closed and unlabeled.	Y	Y	40.60289	14.3969
12	Torione Villara		Tower	NA	NA		Private	Y	Part of the Marina Protected area of Punta Campanella offices	Y	Y	40.60884	14.3450

Figure 51 -Table of the built entity of interest

In order to be able to carry a network analysis, the road layer, needed to be prepared and completed with specific attributes. The goal in this step was to prepare the different costs¹³ considering different factor, such as the type of roads, depending on their types, some roads are more or less suitable for the touristic path realized through this work. A cost in an Network analysis is an attribute that is accumulated during traversal of a network. The path intended to be for pedestrian and bike, two final costs has been defined: Walk_Cost and Bike_Cost. In the end of this process has been exported a new feature for the road, in order to use a simplified version with only the final informations important for the Network analysis.

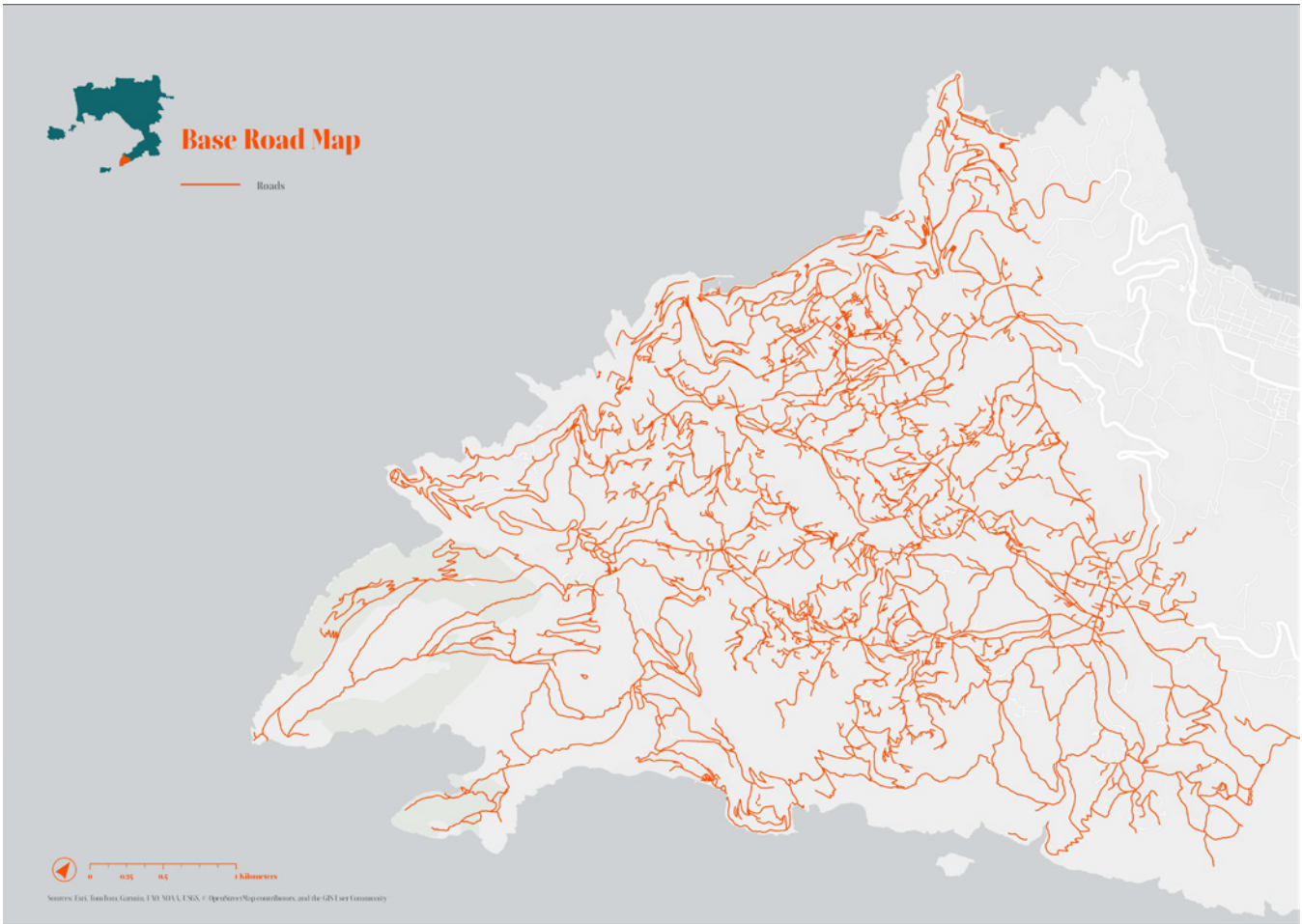


Figure 52 -Base map of the transportation network in Massa Lubrense. Shapefile from OpenStreet Map. Acquired in April 2025

	OBJECTID *	Shape *	F_id	highway	lit	name	oneway	ref
1	5830	Polyline Z	way/338974710	footway	no	<Null>	no	<Null>
2	5831	Polyline Z	way/146858058	track	<Null>	<Null>	no	<Null>
3	5832	Polyline Z	way/338974710	footway	no	<Null>	no	<Null>
4	5833	Polyline Z	way/1014383695	path	<Null>	<Null>	no	<Null>
5	5834	Polyline Z	way/1389025666	footway	no	<Null>	no	<Null>
6	5835	Polyline Z	way/1389025665	footway	no	<Null>	no	<Null>
7	5836	Polyline Z	way/338974741	path	<Null>	<Null>	no	<Null>
8	5837	Polyline Z	way/1093174018	footway	no	<Null>	no	<Null>

Figure 53 -Snapshot of the attribute table of the transportation network shapefile

13. A cost, in an network analysis, is an attribute accumulated during traversal of a network. It is used to model impedance and demand within a network dataset in ArcGIS Pro.

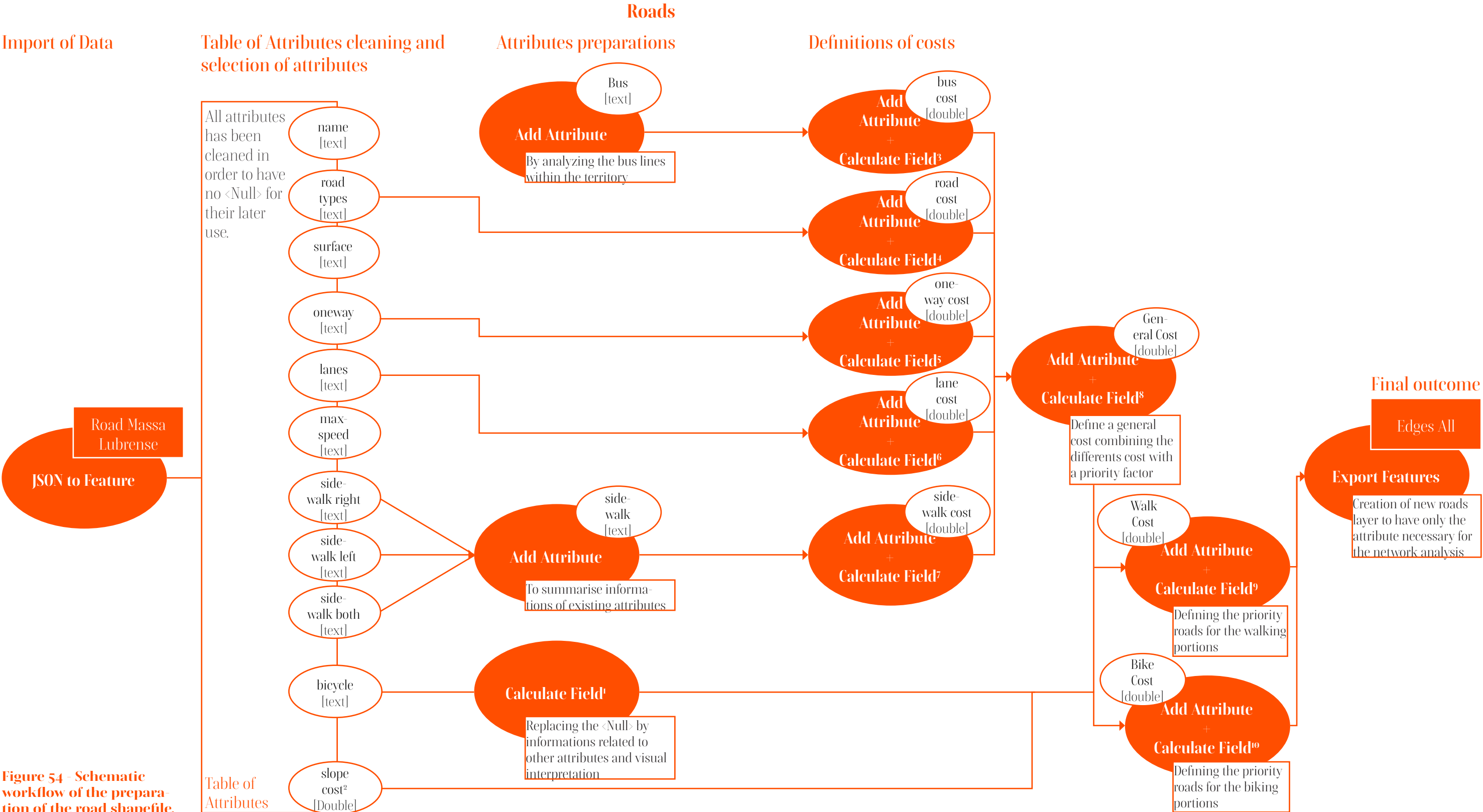


Figure 54 - Schematic workflow of the preparation of the road shapefile.

Layer

Tool

Attribute

1. Python expression: "no" if !highway! in ("footway", "track", "path") else ("yes" if !bicycle! is None else !bicycle!)

2. The slope cost is an attribute defined thanks to the DTM processed previously in order to get the slope percentage on each segments of the roads with the geoprocessing tool "Add Surface Information". To obtain the slope cost, the data obtained with this tool are recalculated with the tool "Calculate Field" in order to get a normalized value.

3. Python expression: 1 if !bus! is "no" else 5

4. Arcade expression: IIF(\$feature.highway == 'footway' || \$feature.highway == 'path' || \$feature.highway == 'track', 1, IIF(\$feature.highway == 'residential' || \$feature.highway == 'living_street' || \$feature.highway == 'unclassified', 2, IIF(\$feature.highway == 'tertiary' || \$feature.highway == 'secondary', 3, 5)))

5. Python expression: 3 if !oneway! == "NA" else (5 if !oneway! == "yes" else 1)

6. Python expression: 3 if !lanes! == "NA" else (1 if !lanes! == "2" else 5)

7. Python expression: 5 if !sidewalk! not in ("both", "oneside") else (1 if !sidewalk! == "both" else 3)

8. Python expression: "0.40 * !road_cost! + 0.25 * !bus_cost! + 0.15 * !sidewalk_cost! + 0.10 * !oneway_cost! + 0.10 * !lane_cost!"

9. Python expression: !LENGTH_M! * 0.7142857

10. Python expression: (!LENGTH_M! * 0.2222222) * (1 + (0 if !Z_MEAN! is None else (!Z_MEAN! / 100.0 * 3.0)))

After preparing the necessary dataset, the Network Analysis has been configured and carried out in order to obtain the ideal path considering the sustainability factor previously defined. The following workflow has been carried out in ArcGIS Pro, through the network analysis process. To have a more precise result, the Edges_All layer, representing all the roads in the territory, has been divided into two new layers; the Walk_Edges, containing all the road segments accessible to pedestrians, and the Bike Edges, referring to the portions of the roads that include bike users. These resultant layers were obtained with the creation of two new attributes in Edges_All's table of attribute, in order to compile, thanks to the Calculate field tool, the scattered data related to the two uses of walking and biking. These new attributes were used to export the two new layers. Walk_Edges, Bike_Edges and Edges_All, have been exported within a Feature Dataset¹⁴ "Massa FD", in order to be able to create and configure the Network Dataset¹⁵ (ND) "Touristic Trail ND". The configuration of the ND consists of preparing the different Travel Attributes¹⁶ (TA) of the projected path. The necessary TA in this case are the Costs, the Travel modes¹⁷ and restrictions. When preparing the Walk_Edges and Bike_Edges, costs were created as attributes. In this project, three time-defined costs were used: the Walk_Cost, calculating the amount of time to walk a given segment, the Bike_Cost, representing the time to bike a given segment, and the Transfer_Cost. The Transfer_Cost considers the time it needs to switch from a biking to a walking segment; this is used to penalise the transfer, and to minimise the required number of transfers within the path. Those costs were used to compute three different travel modes: Walk_Mode, Bike_Mode and the Multi_Mode. The latter combines the walk and bike costs, in order to obtain a general cost, giving us the possibility to solve the entirety of the path.

The final travel attribute, the restriction, has been defined as No_Bike, completely restricting the access for the bikes on the edges that do not allow it. Once the travel attributes in the ND were set, a Route analysis¹⁸ layer was built, within

14. In ArcGIS Pro, "a feature dataset is a collection of related feature classes that share a common coordinate system. Feature datasets are used to facilitate creation of controller datasets such as a parcel fabric, topology, or utility network.", Esri, *Create and manage feature datasets in ArcGIS Pro*. <https://doc.esri.com/en/arcgis-pro/latest/help/data/feature-datasets/feature-datasets-in-arcgis-pro.html>

15. "Network datasets are well suited to model transportation networks. They are created from source features, which can include simple features (lines and points) and turns, and they store the connectivity of the source features. When you perform a network analysis, it is always done on a network dataset." Esri, *What is a Network Dataset?*. <https://doc.esri.com/en/arcgis-pro/latest/help/analysis/networks/what-is-network-dataset.html>

16. "Travel modes and network attributes are collectively known as travel attributes. Network attributes are properties of the network elements that control traversability over the network. These attributes can be configured to be used by travel modes." Esri, *What are Travels Attributes?*. <https://doc.esri.com/en/arcgis-pro/latest/help/analysis/networks/travel-attributes.html>

17. "Travel modes on a network dataset define how a pedestrian, car, truck, or other medium of transportation moves through the network. [...] A travel mode is essentially a template consisting of a long list of travel settings that define the physical characteristics of a vehicle or pedestrian. Those characteristics are considered when performing a network analysis to define how the vehicle or pedestrian travels and where it can go." Esri, *Travel Modes*. <https://doc.esri.com/en/arcgis-pro/latest/help/analysis/networks/travel-modes.html>

18. "The route solver can be used to find the best way to get from one location to another or to visit several locations. The best route can be the quickest route for a given time of day considering the traffic conditions applicable during that time, or it can be the shortest route that minimizes the travel distance. The route solver can also find the best route that visits each stop during permitted time windows you specify." Esri, *Network Analyst Solvers*. <https://doc.esri.com/en/arcgis-pro/latest/help/analysis/networks/network-analyst-solver-types.html#505>

which the stops from the "Tower Massa Lubrense", prepared in the previous steps were added.

Network Analysis Process

Subsequently, the Route has been solved to obtain the walking and biking routes respectively. Those two routes are then intersected in order to highlight the nodes where transfer between the biking and walking happens. Furthermore, the resulting routes helped compare and point out the differences between the two. By using this intersections and comparison, stops were added to the nodes, in order to position the bike parkings as well as underlining the walking segments that require backtracking to let the users accessing to their bike in order to continue the path. Those stops are then used to solve the route one more time to get the final path.

Network Analysis Workflow

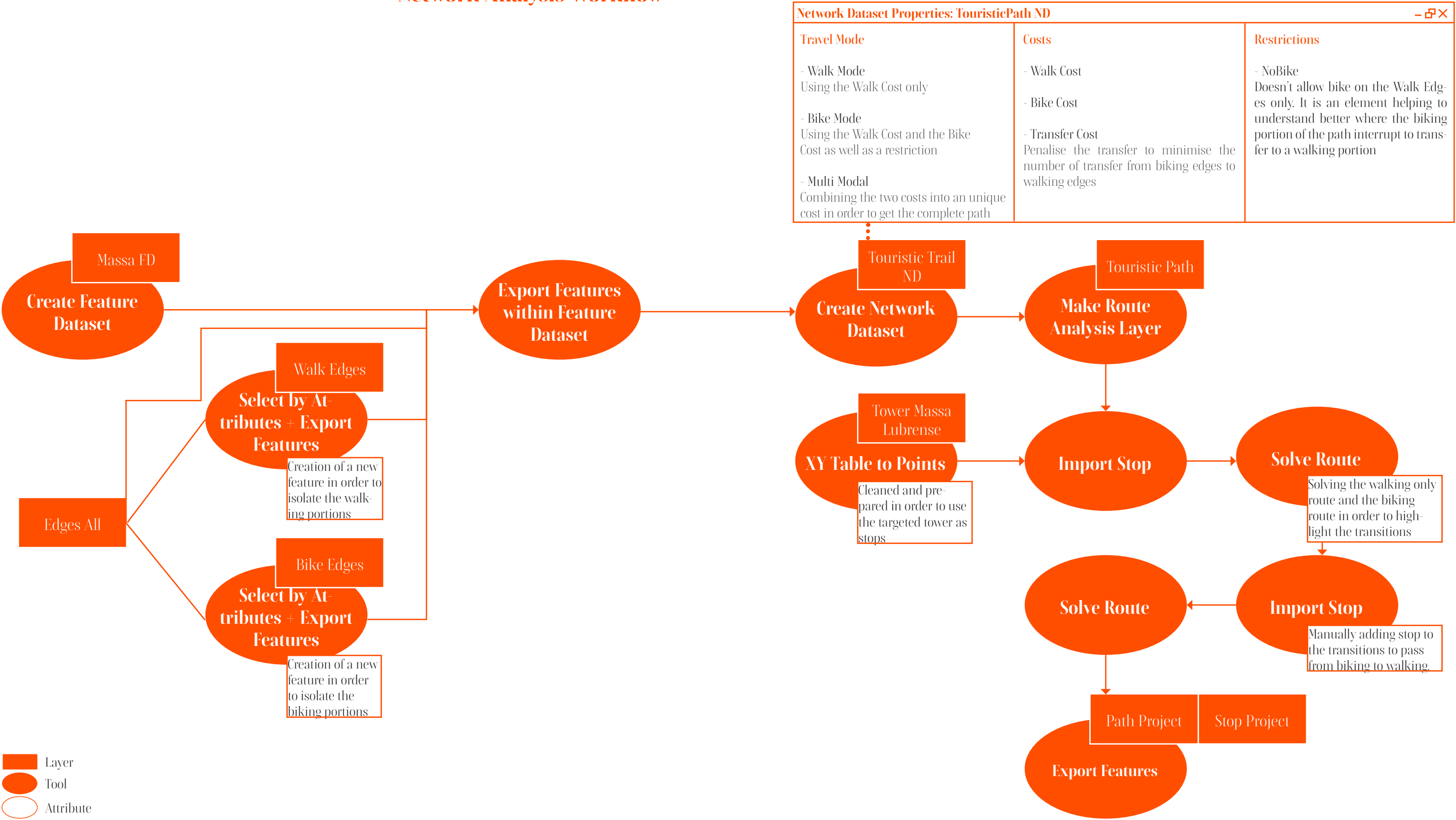


Figure 55 - Schematic workflow of the Network analysis and the Route solving in ArcGIS Pro.



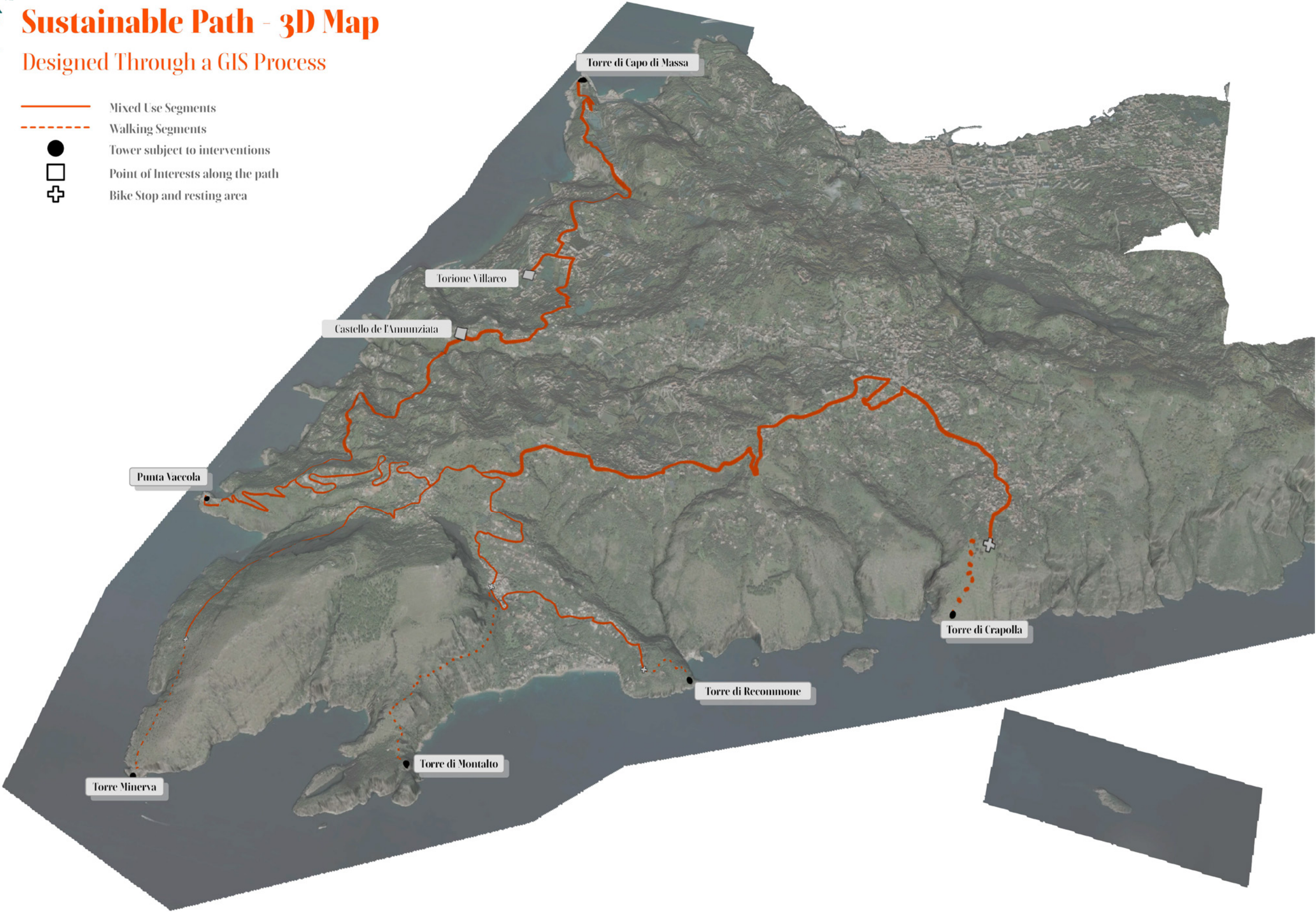
Figure 56 -Map of the projected path designed through Network Analysis in ArcGIS Pro



Massa Lubrense Watchtower Sustainable Path - 3D Map

Designed Through a GIS Process

- Mixed Use Segments
- Walking Segments
- Tower subject to interventions
- Point of Interests along the path
- Bike Stop and resting area



Microsoft, Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 57 - 3D Map of the projected path designed through Network Analysis in ArcGIS Pro

The path, precedently defined thanks to the GIS process, will also be designed architecturally. The contextual typologies observed along the route, has inspired the design intervention of the path, and the elements existing on the road. After identifying the typologies present in the context, the path has been designed with the will to make it accessible for bike, and pedestrian users. To answer to the needs of those target groups, signage, furniture and supporting infrastructure will be placed accordingly.

V. Path Intervention

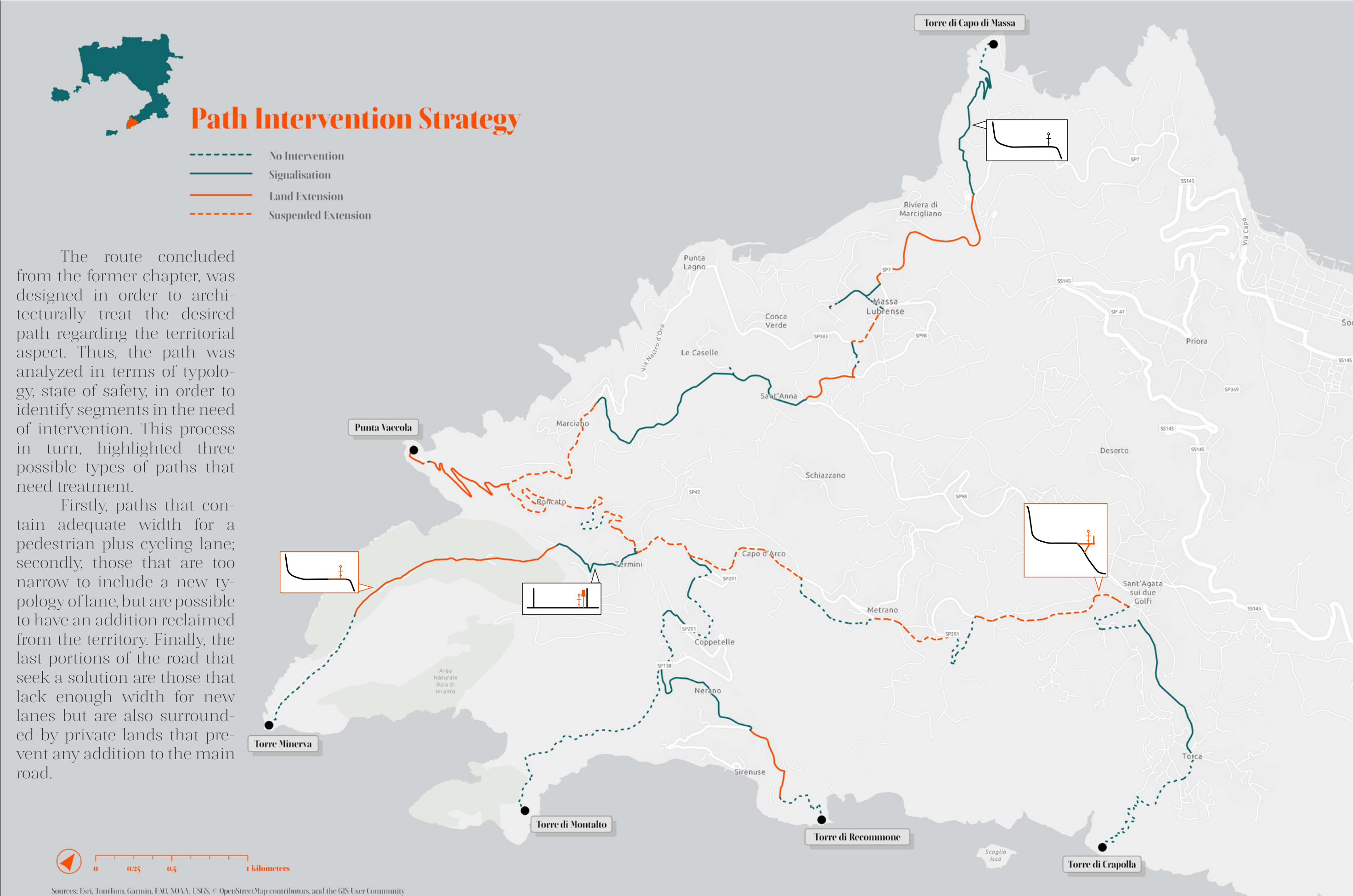


Figure 58 -Map of the path intervention strategy designed through Network Analysis in ArcGIS Pro

Path Design

To the paths that were lacking pedestrian/cycling lanes, while having the possibility to have an addition, a cantilever lane was proposed as the inclusion of more means of transportation, as well as ensuring the safety of such users. Although the materiality and structural system of the intervention remain the same for the paths of this category, the dimensions are susceptible to adjustment. In the case chosen in this part of the study, the addition has been 2 meters wide, mainly dedicated to pedestrians and cyclists.

Concrete blocks act as foundation and leveling elements; metal beams positioned diagonally between the concrete blocks and the primary and secondary I-beams are the main supporting components of the wooden pavement planks, together with the timber railing. The metal beams are connected with moment joints of plates and bolts. As a coherence between the path design projects and the later tower design proposals, the timber beams of the railings are covered with a sailcloth fabric.

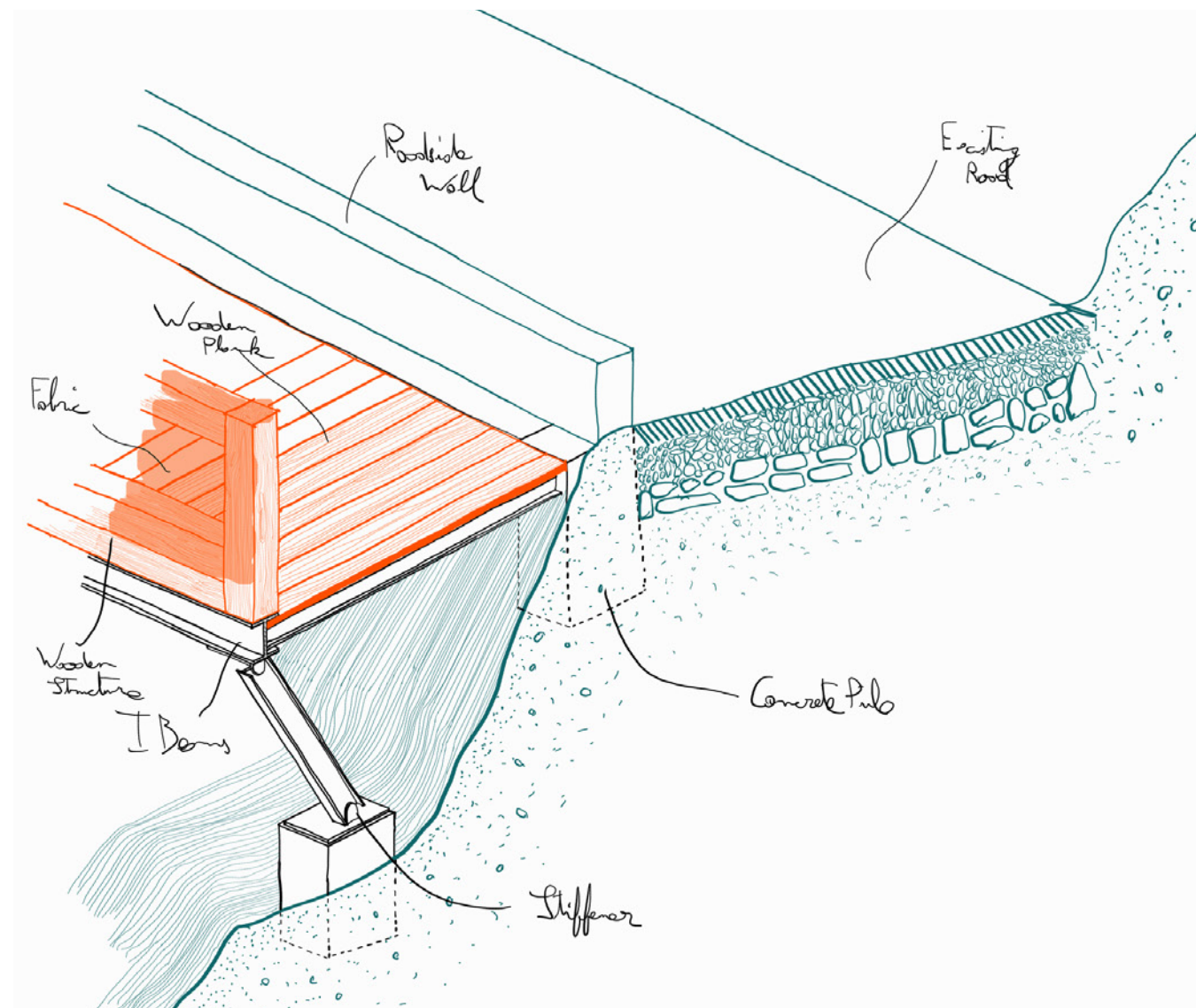


Figure 59 - Cantilevered road extension design concept sketch

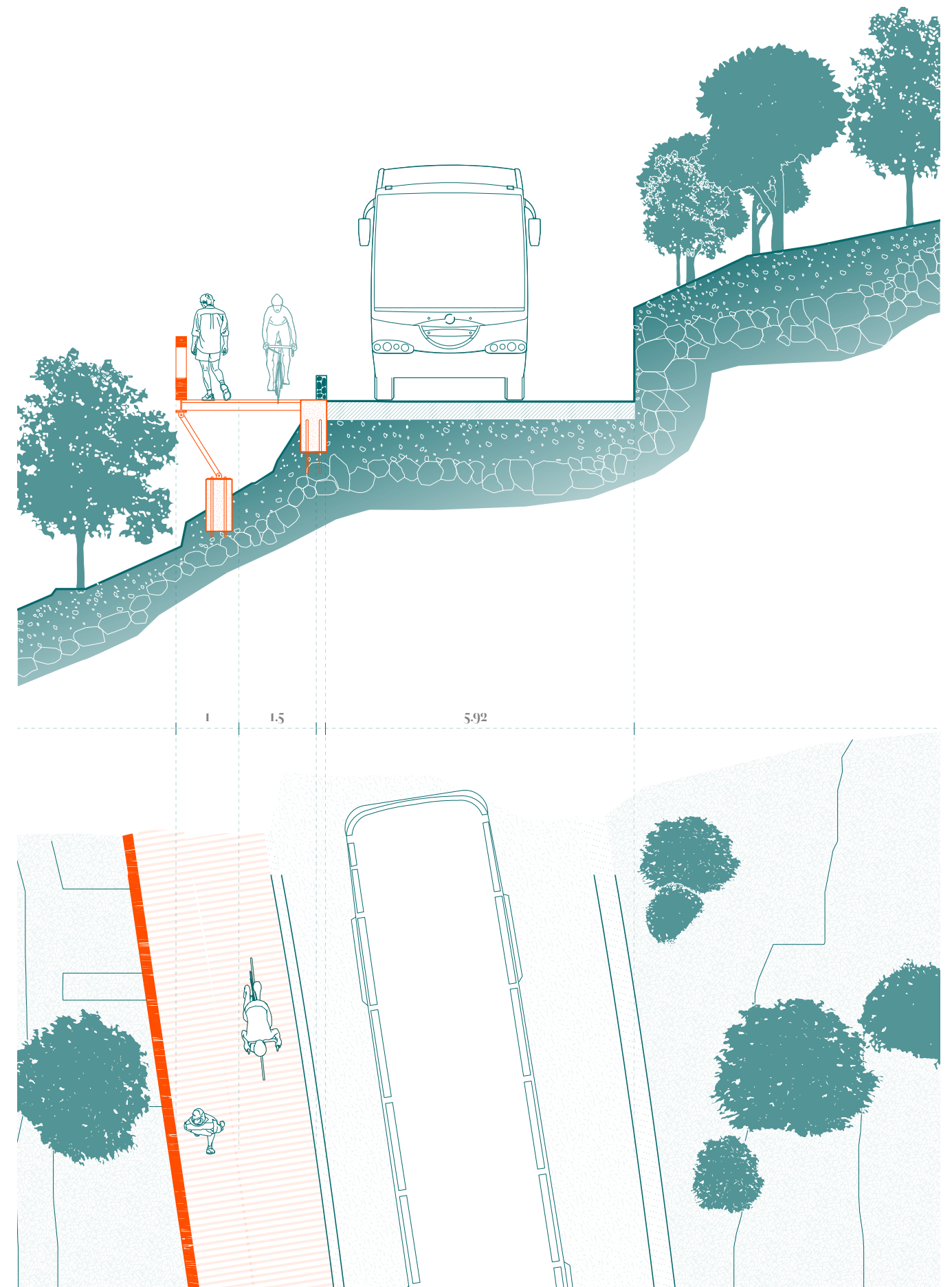


Figure 60 - Cantilevered road extension - Plan and Section



The second intervention has been proposed for the portions of the path that allow for the reduction of width of the street that has been originally dedicated to the vehicles. Similar to the former scenario in terms of structural hierarchy and materiality, a reclamation of the path has been designed, of about 2 meters creating possibilities for walking and cycling.

Timber decking and railing rest on secondary and primary steel beams that are supported by leveling concrete blocks.

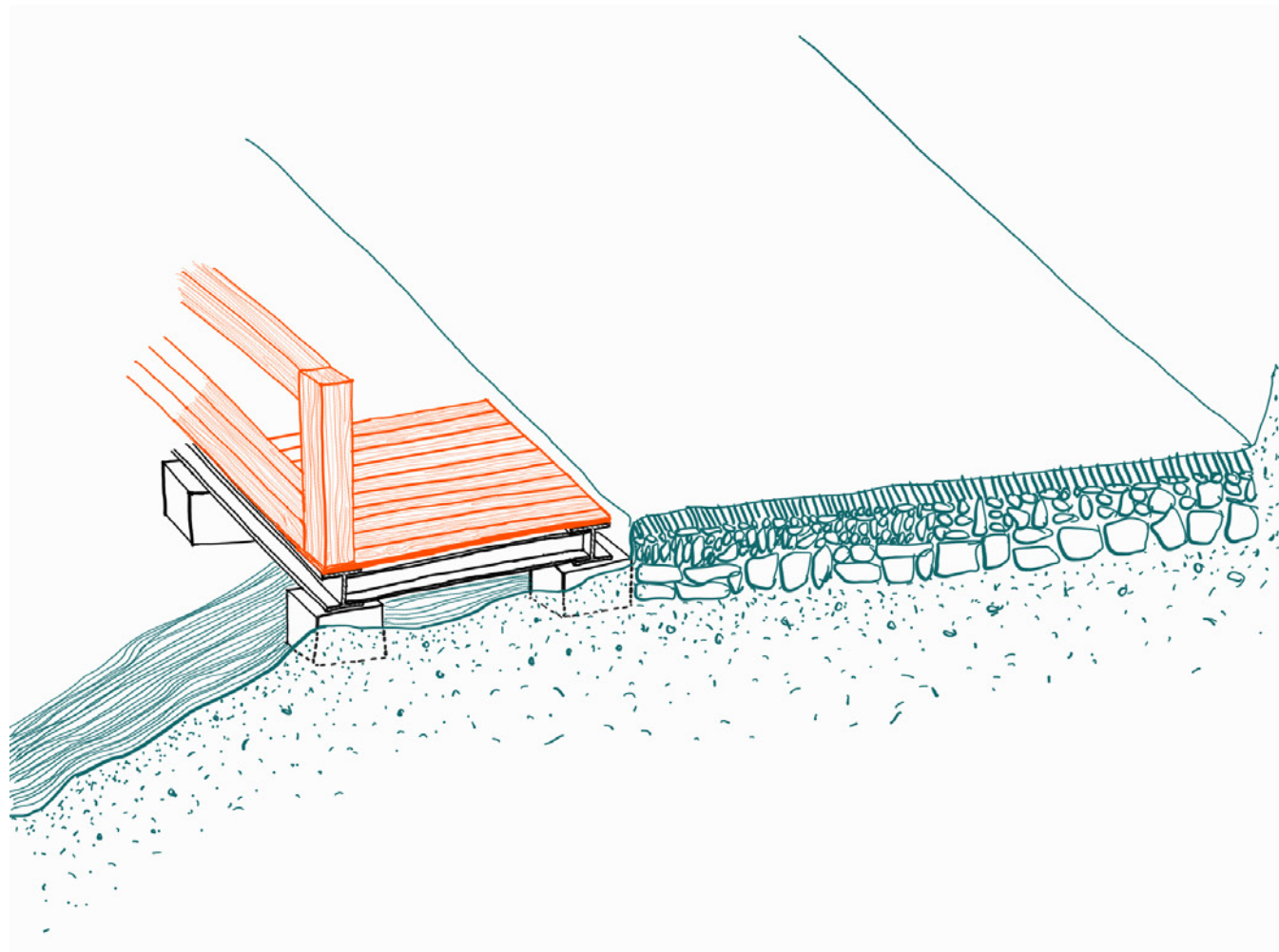


Figure 61 - Road extension design concept sketch

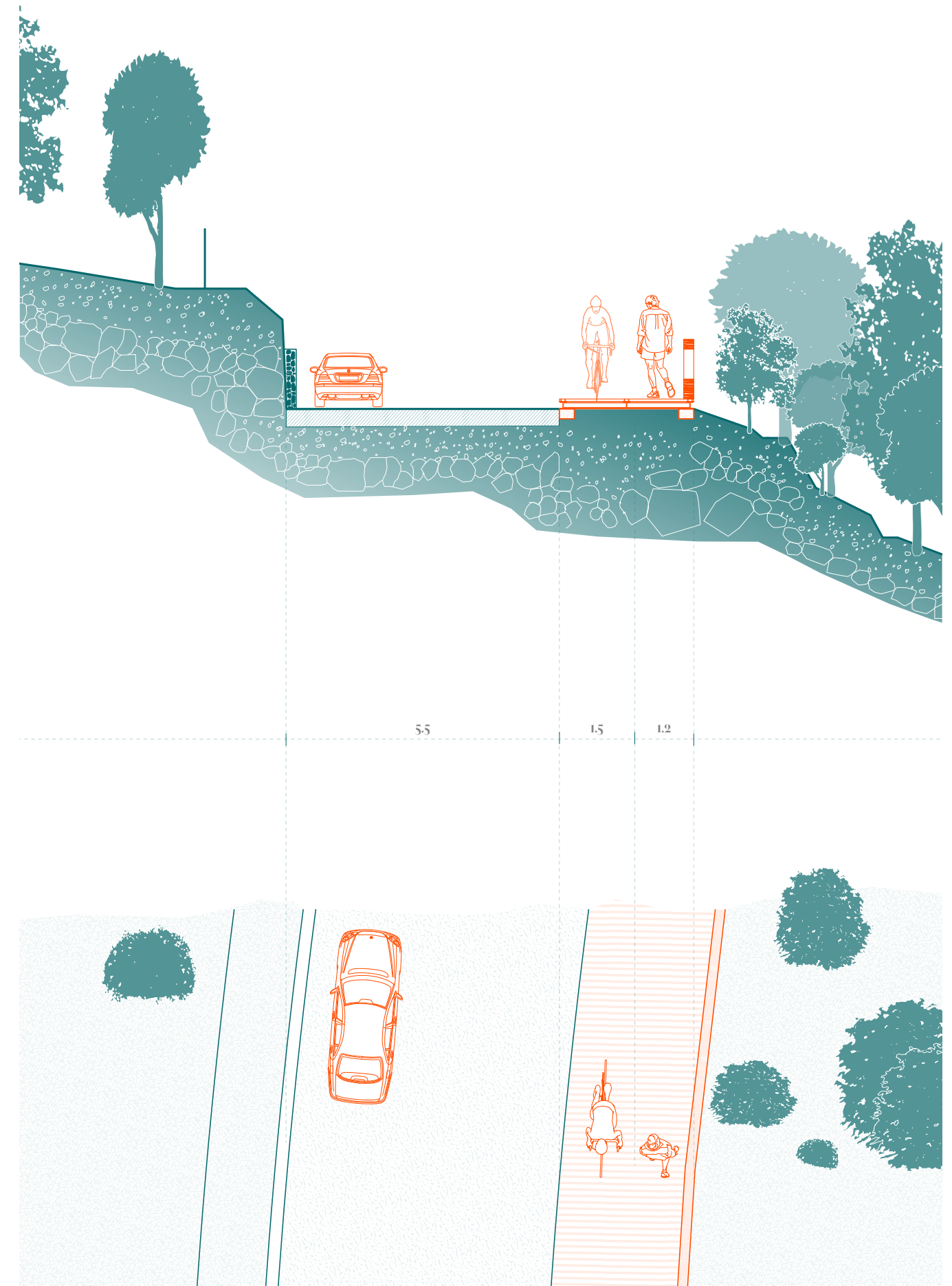


Figure 62 - Road extension design - Plan and Section



The final intervention is solely applicable to the paths that do not allow addition, reclamation, or any urban alteration of the path, due to the nearby properties, or dimension restrictions. In this scenario, the solution suggested has been placement of signposts in a reversible manner. The signage throughout the entire path, differ in the information conveyed; from directional, to descriptive, identification, and regulatory. However, regarding this typology of intervention, the signs fall under the category of regulatory. Warnings are to be placed accordingly, in order to ensure the interruption in the common rhythm of the route.

These timber markers have been designed as a simple form that recalls the truncated shape of the watchtowers, bolted to the timber posts. This system is fixed to a U-bracket that is connected to a ground screw.

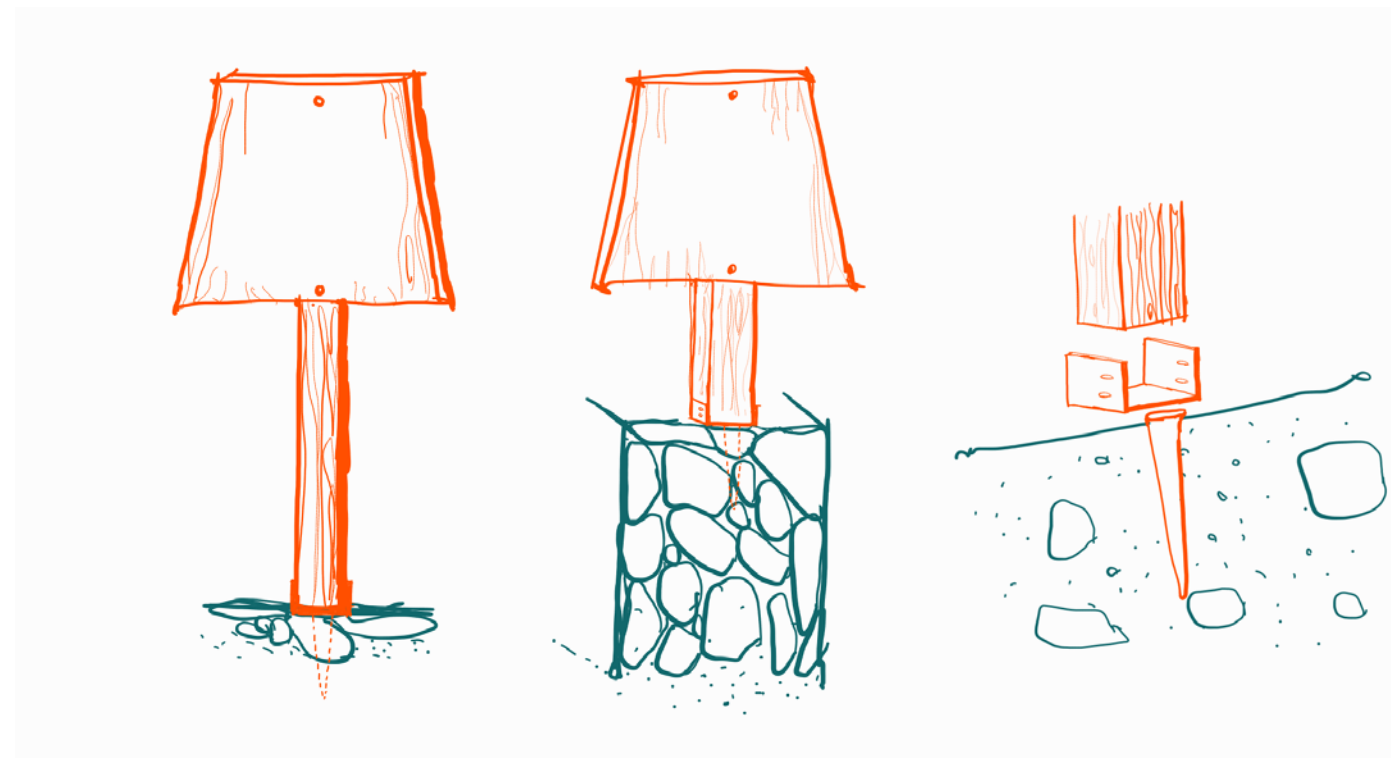


Figure 63 - Signage type concept sketches

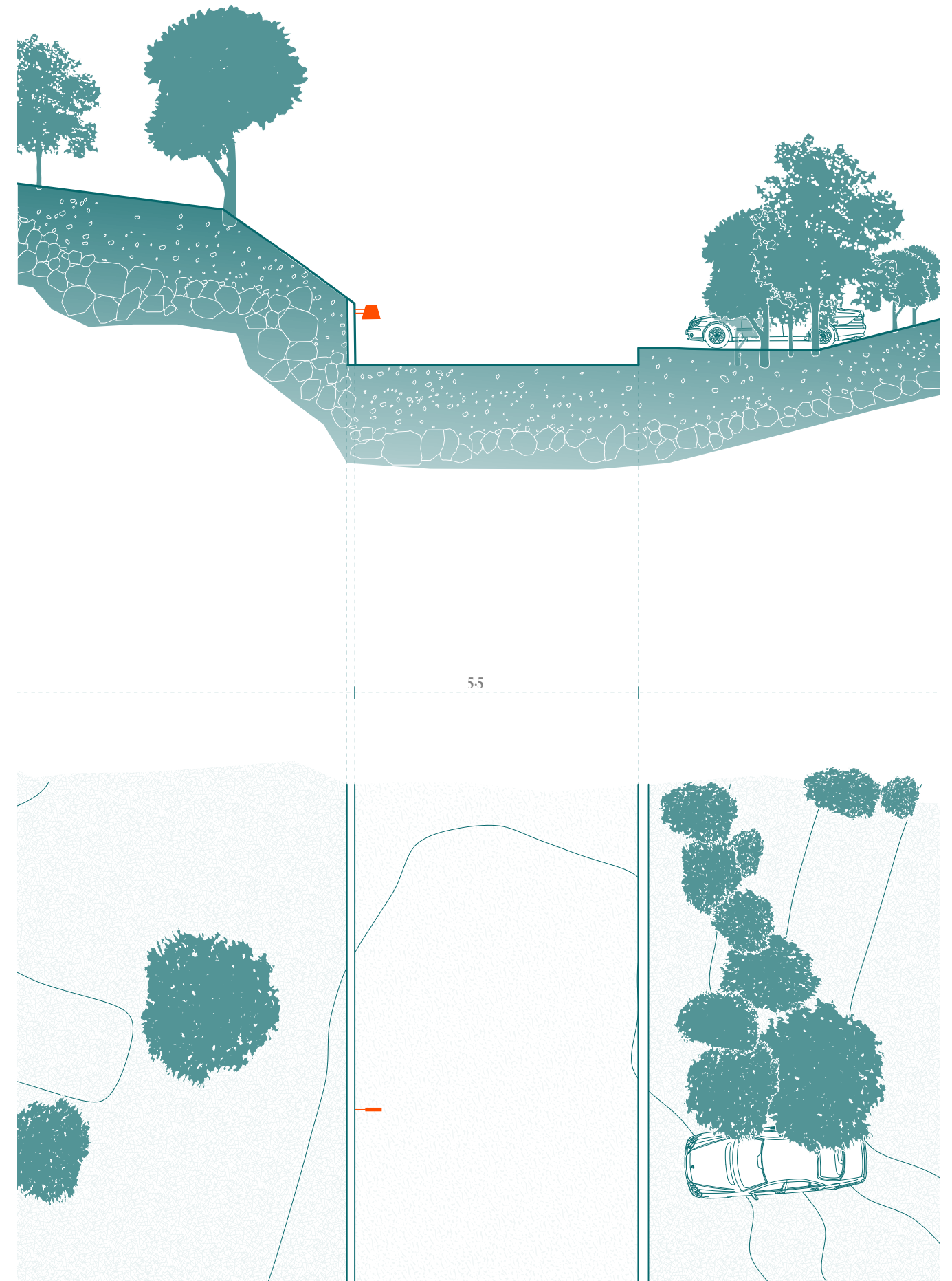


Figure 64 - Road segment with safety signage - Plan and Section

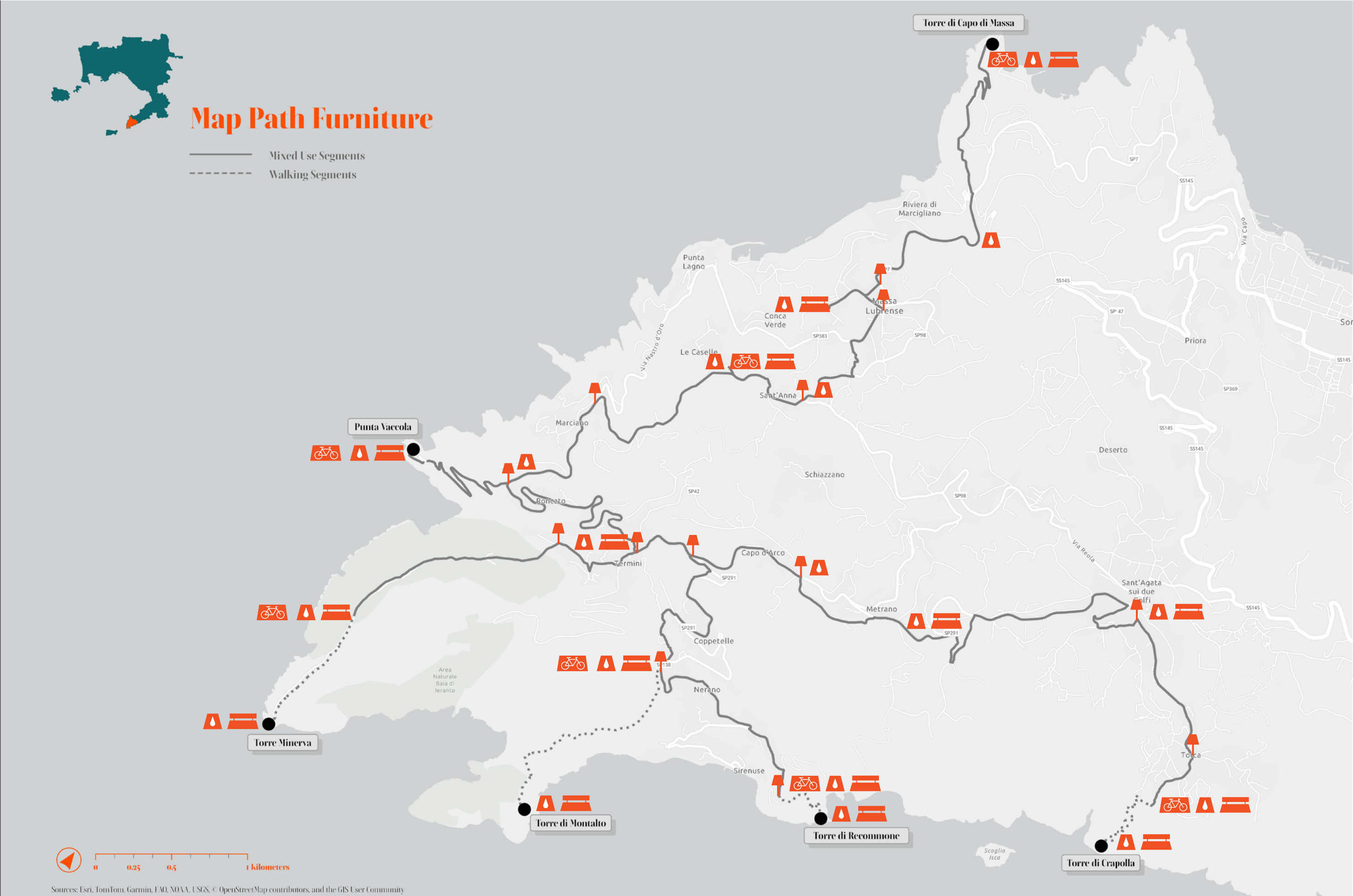


Figure 65 -Map showcasing the location of the equipments and furniture along the path.

Territorial Elements

Through the extraction of the common elements constituting the architecture of the study, the watch towers, repetitive forms were taken as inspiration, for the design of the territory's signage, and infrastructure. Generally, two categories were noticeable, and appropriate for this project: the truncated pyramidal shape of the watch towers, from the on-site observations, as well as the crenelations making up the battlement system of the towers, rarely visible currently, but certainly part of the architectural typology based on the archival documents. Hence, such context-inspired geometries helped the architectural and territorial projects unite better, suggesting hints from the characteristics of the area, whether existing today or before.

The objective was to reinterpret the historical form through a contemporary design, by abstracting the selected inspirations from the towers and applying them to smaller-scale architectural elements. This helped create a visual coherence throughout the project area, as well as making the new distinguishable. Signage, seating areas, fountains, and bike parkings are not isolated objects, but parts of a larger territorial system.

Material selection further follows the choices for the other parts of the entire project. Timber, steel, concrete and fabric are employed to amplify the identity of the route. Based on their structural role, they have been utilized according to the territorial object.



Drinking Fountain

The drinking fountain was designed as a supporting facility of the route. Positioned at important crossings, and points of interest, these elements were at maximum 3 kilometers away from one another. The form draws inspiration from the existing towers as well as the method through which added volumes were placed on the towers. Thus, a concrete core has been covered with timber beams until halfway of its height, and a steel pipe installed for the potable water.

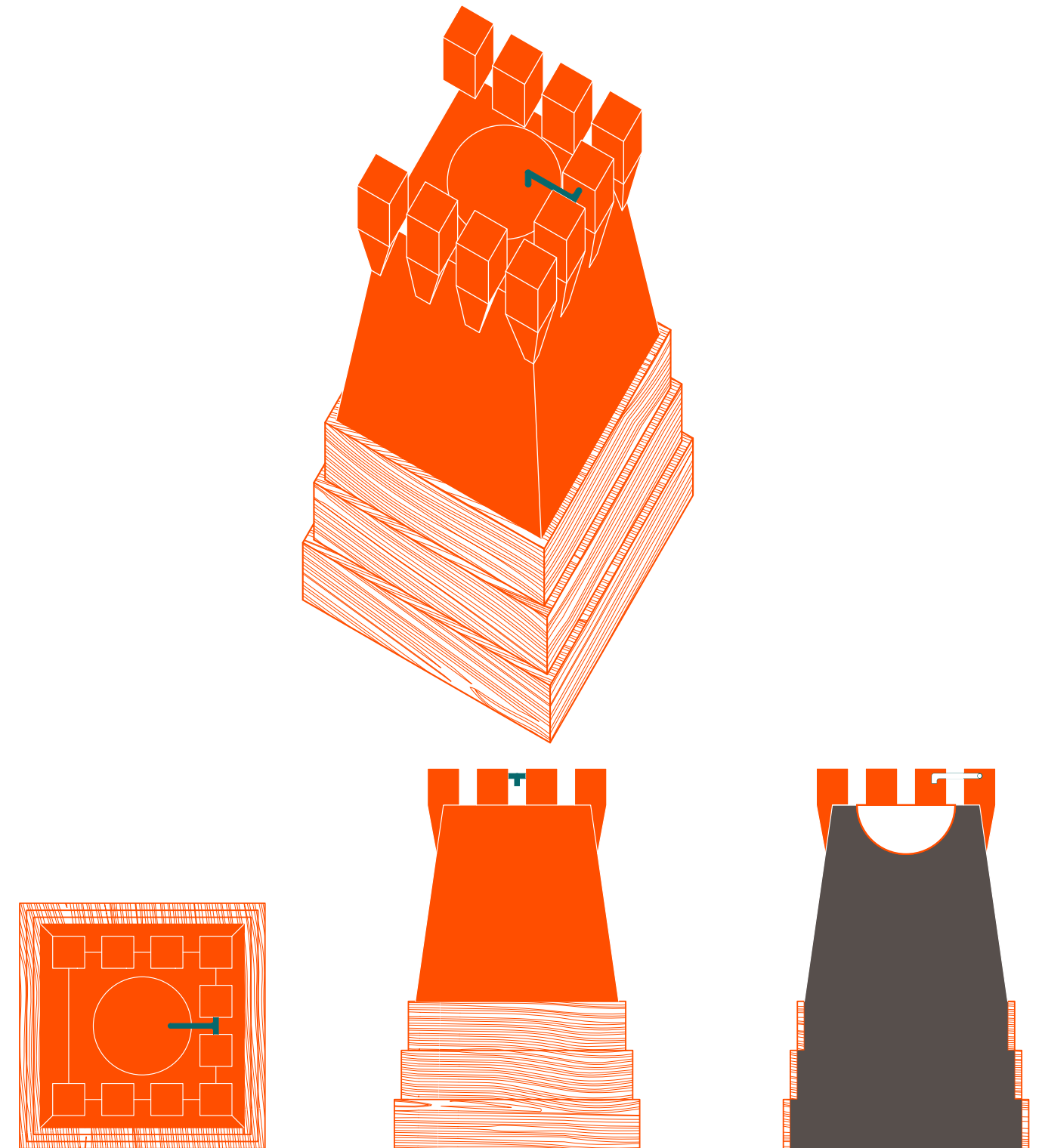


Figure 66 - Technical drawings of the drinking fountain

Bike Parking

The bicycle parking was created as a functional elements but also a continuation of the project's design language. The general form derives from the tower's geometry, while its bike locking points are a reinterpretation of the crenels and merlons that constitute the battlements, which includes metal hoops for the bike to be place vertically. The base of the structure is in concrete, and the wooden frames together with fabric, close this shelter-like space. These elements are located next to the towers that are accessible by bike, and before the start of the pedestrian-only segments in which the bike-use is not possible.

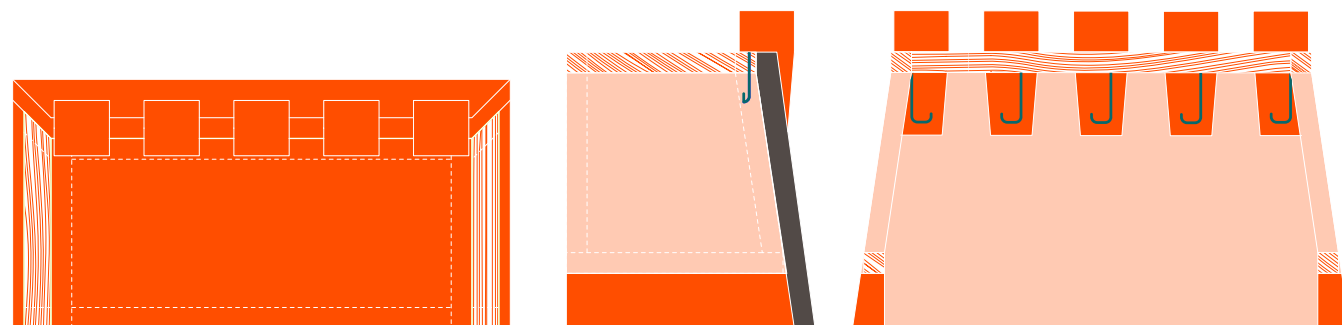
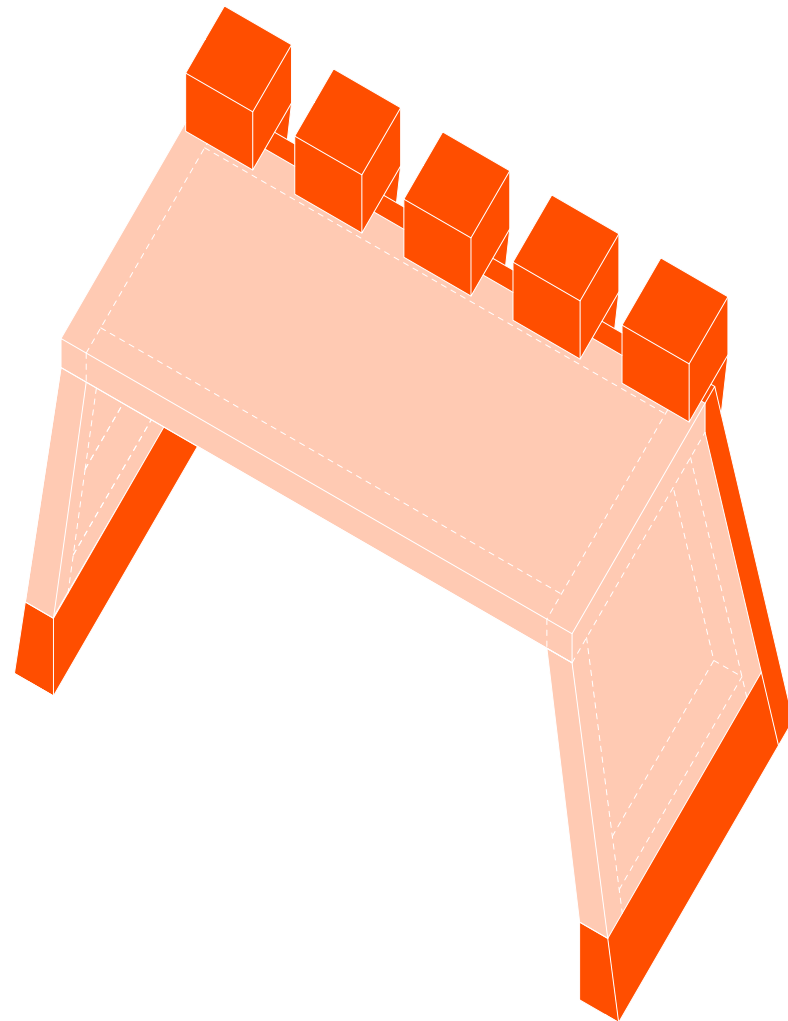


Figure 67 - Technical drawings of the bike parking

Benches

The seating areas were designed as critical resting stops, as well as possible viewpoints to help pauses during the entire experience. Similar to the former objects, the geometry of the base seating refers to that of the watchtowers, made in concrete, while the upper supporting part is in reference to the new project additions, built as timber planks and beams covered with fabric. Equivalent to that of the fountains, these benches were positioned at important crossings, and destination points, ensuring their existent in at least every 3 kilometers.

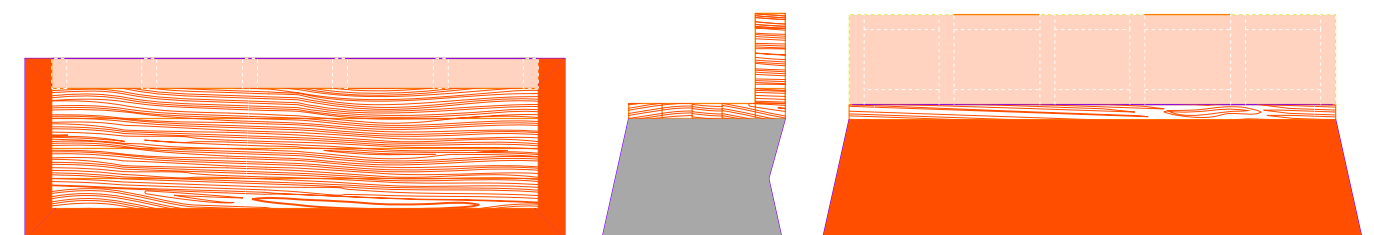
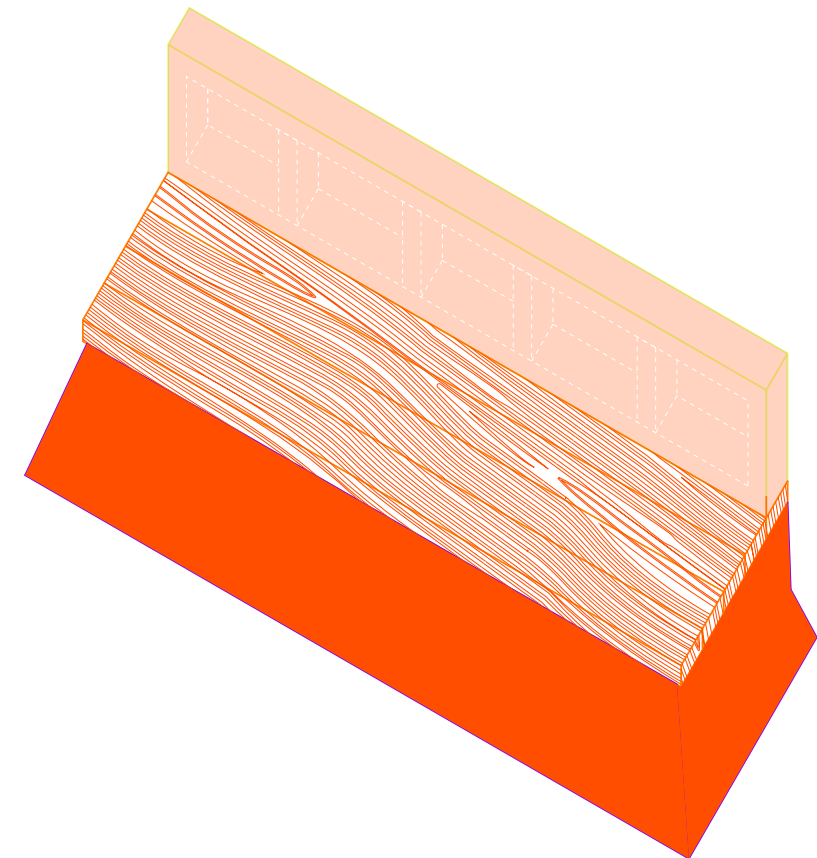


Figure 68 - Technical drawings of the bench

The architectural project aims for a similar, and recognizable solution, which ties each tower's intervention into a single project. To be able to achieve this unifying solution, the materiality and structural choices are pre-defined. Such strategies will be illustrated on various scales, from the global conceptual schemes, to technological details in terms of construction.

VI. Architectural Intervention

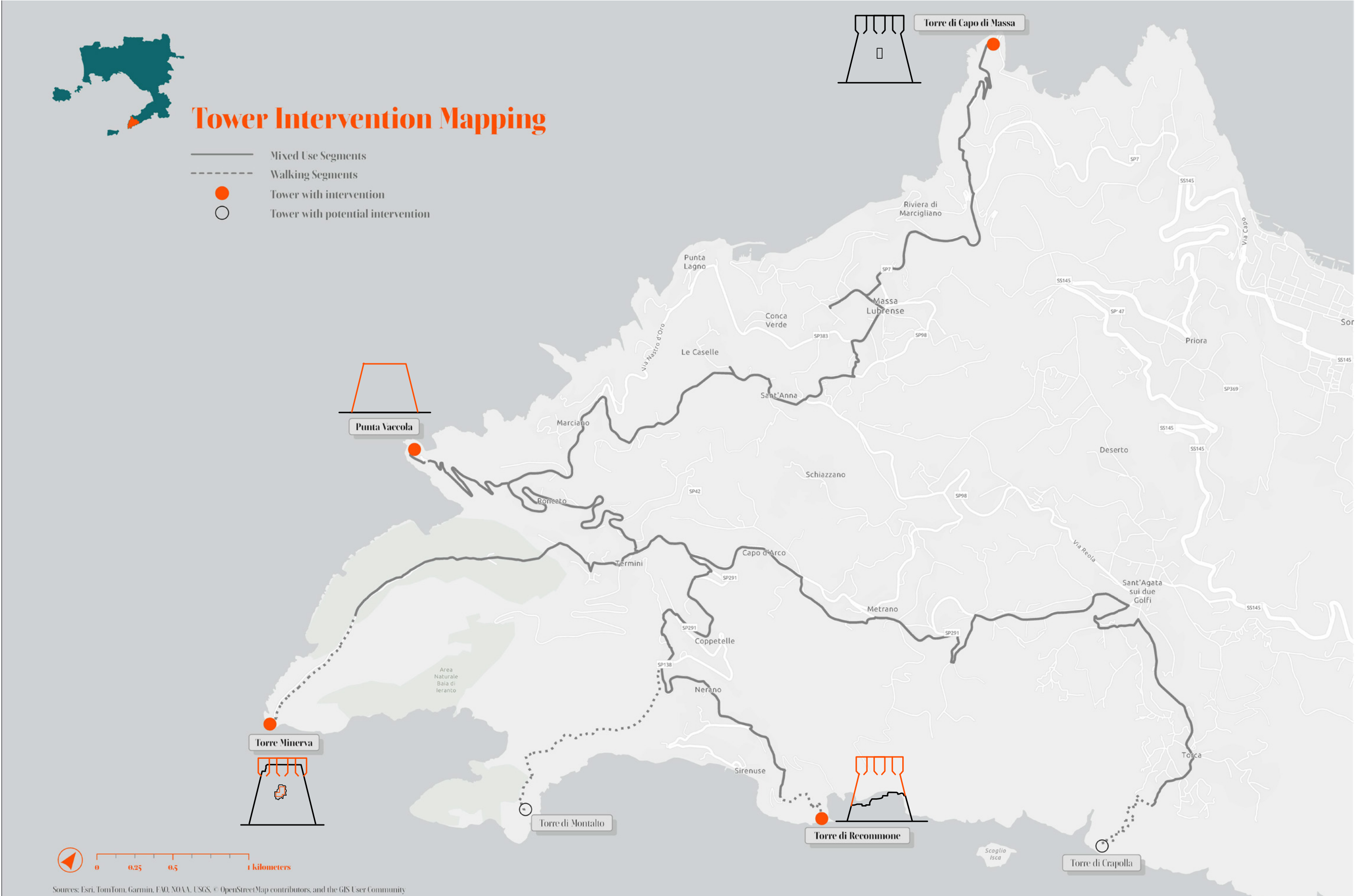


Figure 69 -Map of the localisation of the tower intervention and potential future intervention

Materiality and Structural Strategy

The project is an addition to the conserved existing. In other words, to make the buildings back to their previous looking state, by using modern materials to complete the missing portions while protecting the older parts. This idea is in line the restoration typologies of Castell de la Tossa and the Castle of Matrera where newly added elements are recognizable while bringing the life back to what was once abandoned.

Before the addition of the elements a non-woven geotextile membrane was laid on the existing masonry acting as a separator that prevents direct contact and creates distinction between old and new.

Subsequently, the missing geometry of the tower is rebuilt using light weight concrete. Rather than copying the original appearance the concrete is used as a completing modern layer. The neutral color allows the masonry to stand out while creating the desired distinction. The concrete also served as the support for the upper additions and spaces. These elements are anchored to the concrete instead of the stones of the original building.

The above addition is designed as a timber structure, due to its lightness and ease of assemblage. The main principle is to lay five logs on top of each other forming a ring that are connected with dove tail joints. This is then reinforced by long log screws running through the stacked beams and finally anchored to the concrete, in order to increase the stability while maintaining the visual clarity.

From this base a series of timber frames define the space and are enclosed with sail cloth fabric that wraps around the uppermost log of the stack.

The entire design choices of the added volumes in wood and translucent fabric has been inspired by Kengo Kuma's Memu Meadows. A permeable enclosure that filters sun, softens shadows and provides protection from the wind and rain proper to the coastal entity of the site. Furthermore this translucent skin creates a visual connection with the surrounding landscape while contrasting the heavy presence of the old masonry below.

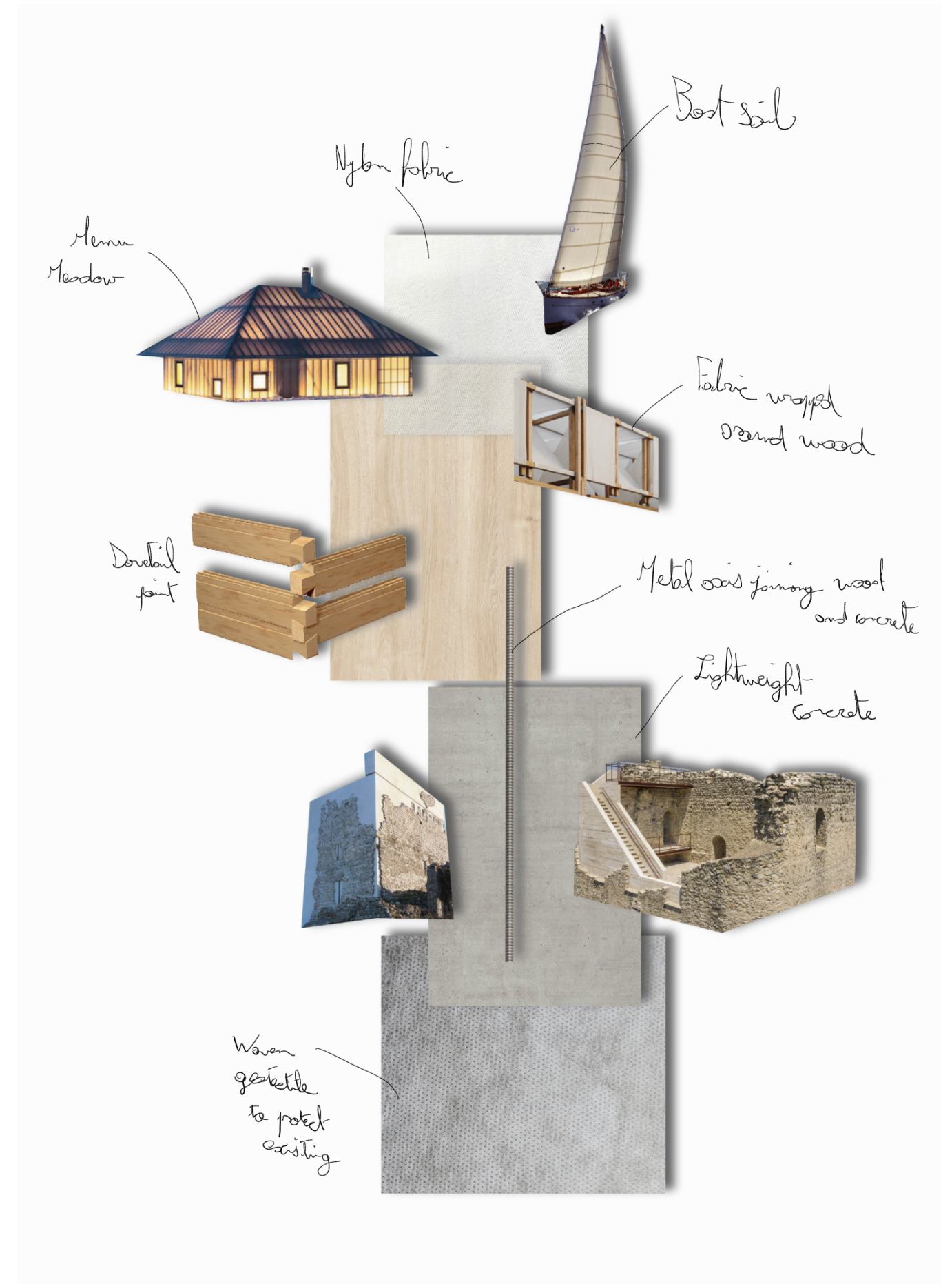
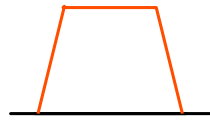


Figure 70 - Moodboard of the materiality and structural strategy



Torre di Punta Vacciola

On Punta Vacciola, the knowledge of a former watchtower enabled to create a design from scratch, by taking inspiration on the other existing tower within Massa Lubrense. That location situated close to a beach known as a touristic attraction leaded the design to serve the path but also creating a space interesting for all kind of users. The decision has been made to design an open air bar/cafeteria.

The design was realized by recreating a platform in concrete with the average dimension and side inclination of the towers in Massa Lubrense, representing the ground floor of such towers. This effect reinforced by the creation of a modular architecture on top, made of wood and fabric, creating the interior space for the preparation of the food and for the bar. The access for the staff has been designed in the back of the platform with the creation of steps to enter the volume. The public access has been located at the front to go up the platform and access to the bar furniture, which were designed with similar materials as the enclosed volume, taking inspiration from the shapes of the main features of the tower. The tables were designed as truncated pyramids, and the sittings refer to the battlement systems existing within the local system of the coastal watchtowers.

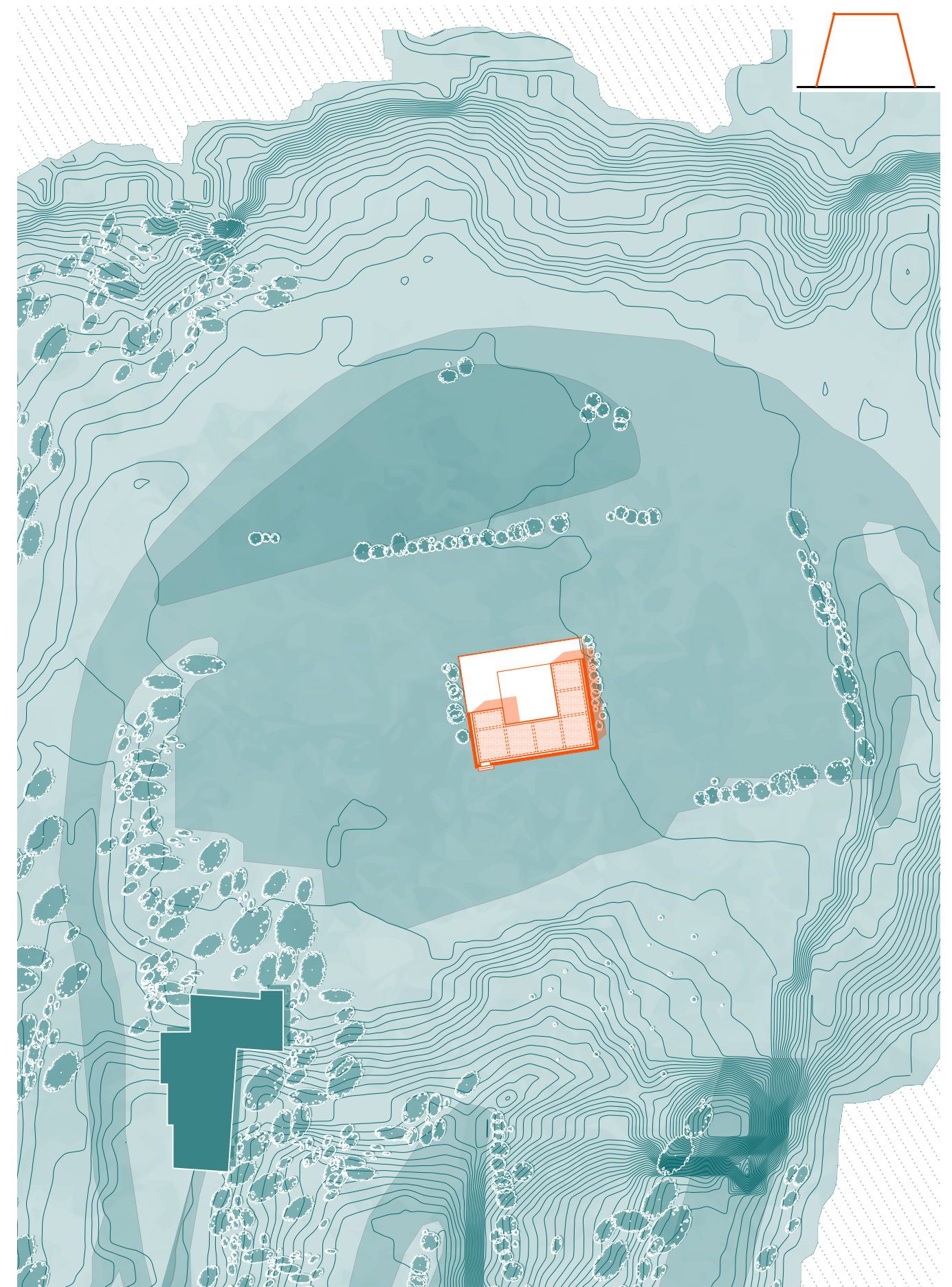


Figure 71 - Punta Vacciola - Context Plan

0 5 10 15 20 meter



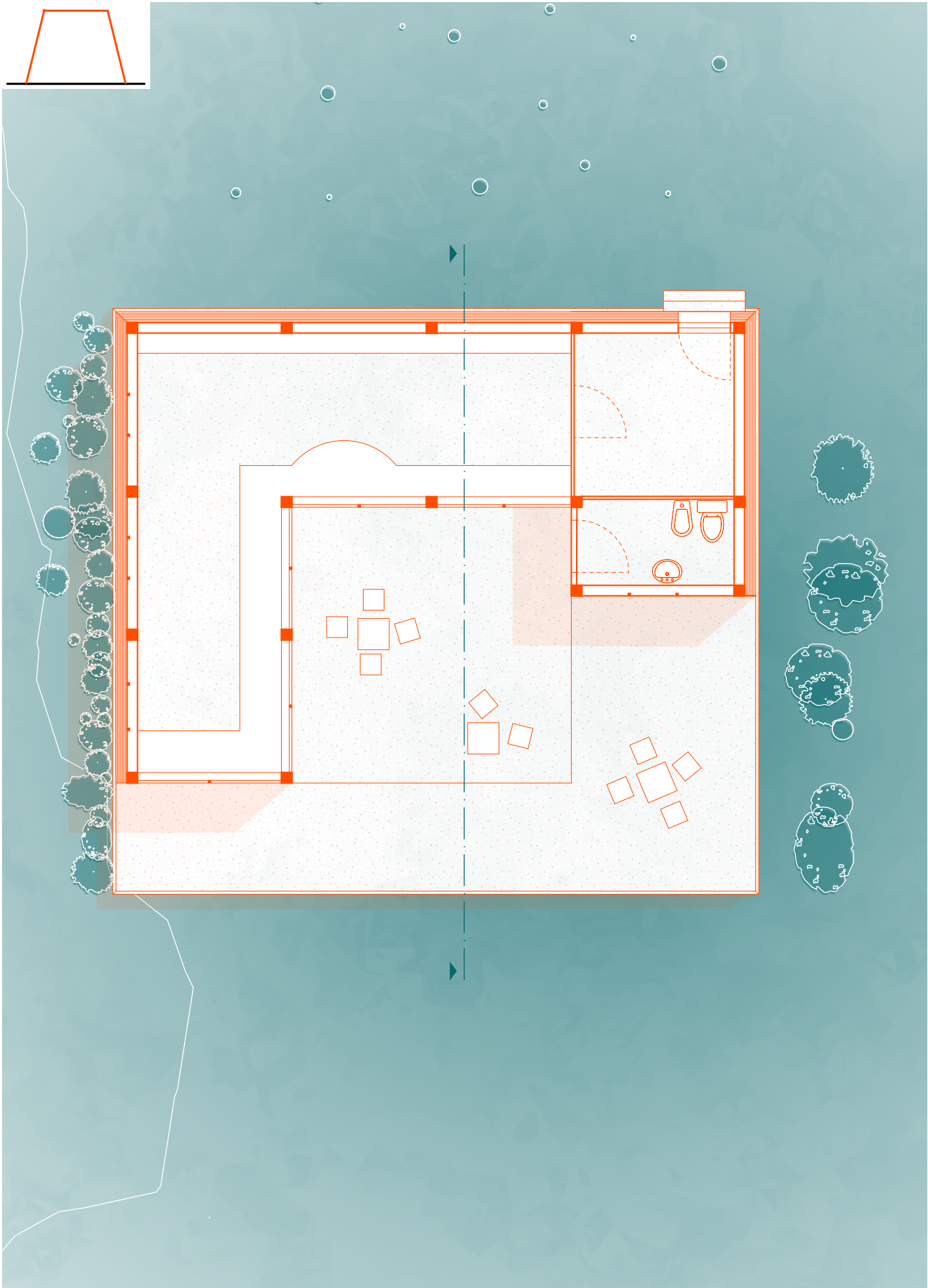


Figure 72 - Punta Vaccola - Plan



Figure 73 - Punta Vaccola - West Elevation



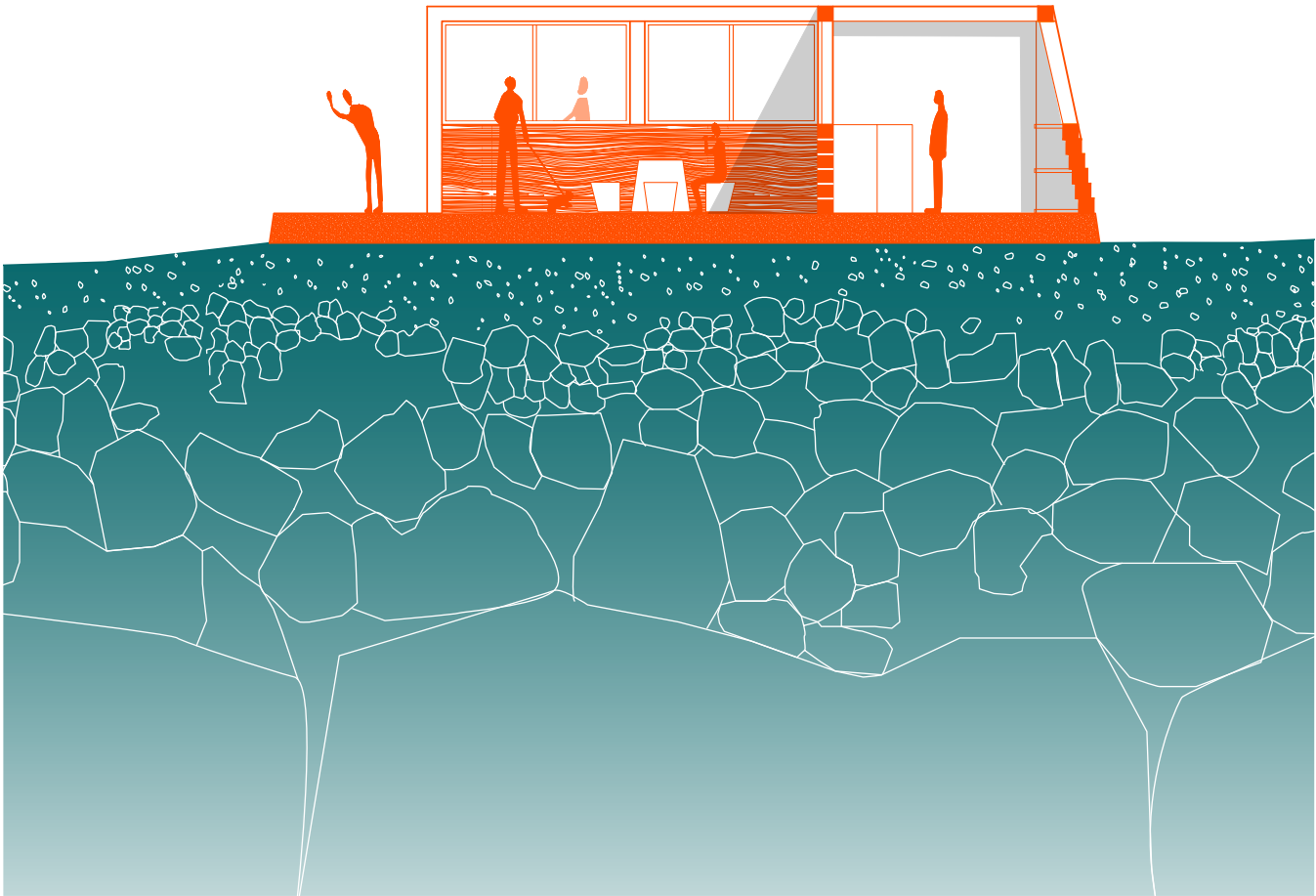
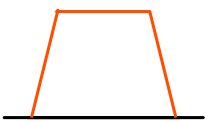
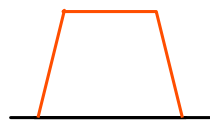


Figure 74 - Punta Vaccola - Section

Interior intervention detail

- 1. Asphalt ground
- 2. Lightweight concrete slab
- 3. Wooden beams
- 4. Metal pin
- 5. Nylon fabric
- 6. Metal screw to fix the fabric
- 7. Bar shelves

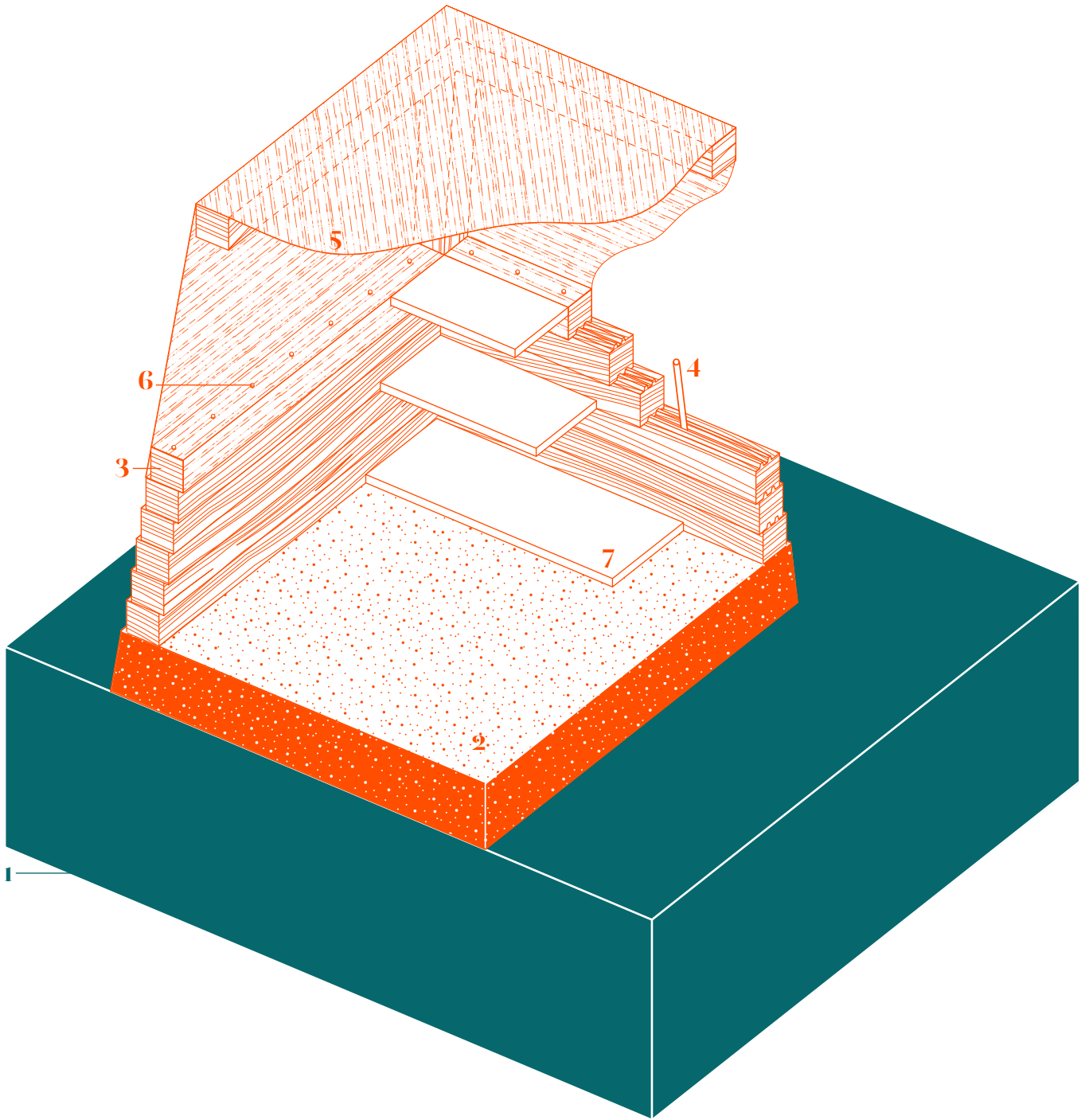
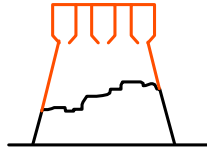


Figure 75 - Punta Vaccola - Axonometry Detail





Torre di Recommone

Torre di Recommone was the tower in the worst state of conservation out of the four selected cases. This tower, close to complete collapse, needed to be strengthened and to be completed in order to be revived. In this case, unlike the other towers, the intervention is not only realized outside but also include a re-construction of what is inside. The interior, particularly damaged because of the consecutive collapse of the different higher elements constituting it, needs to be rebuilt and reinforced, in order to create a usable and safe space. The ceilings and walls of the staircase are rebuilt, and the stairs are flattened with concrete. Concerning the cellar floor, and the main floor, a concrete cage is built in order to retain the walls in case of collapse. For the intervention to be the least invasive, the concrete is not made in direct contact with the walls of the tower, a layer of non woven geo-textile is positioned to avoid the concrete to damage the existing or to make the removal of this intervention impossible.

The exterior intervention is realized in the continuity of the inside concrete intervention. The staircase to the roof being destroyed by the collapse, the concrete box made inside is also designed to create the staircase to access to the roof and is extended higher in order to access to the interior of the vertical extension, made of a wooden structure, assembled thanks to dovetail joints and metal reinforcement. This wooden structure is covered by a waterproof nylon fabric, in order to give an impression of lightness to the intervention, and to contrast with the heaviness of the stone and concrete in the lowest part. That fabric shell is interrupted by the presence of windows all around the tower, except on the North-West Side, being the only side with no views. Those windows allow the visitor to profit of the panorama around the tower.

The site is surrounded by olive trees and lemon trees, thanks to its localization, by the easy accessibility, the presence of the town close by and the surrounding used for local production, this tower is designed as a local product shop and degustation place. The products are stored in the historical cellar of the tower, in the lowest floor, the shop is located in the main floor, and the tasting area is in the extension where the user can try the local products while enjoying the amazing context of Torre di Recommone.

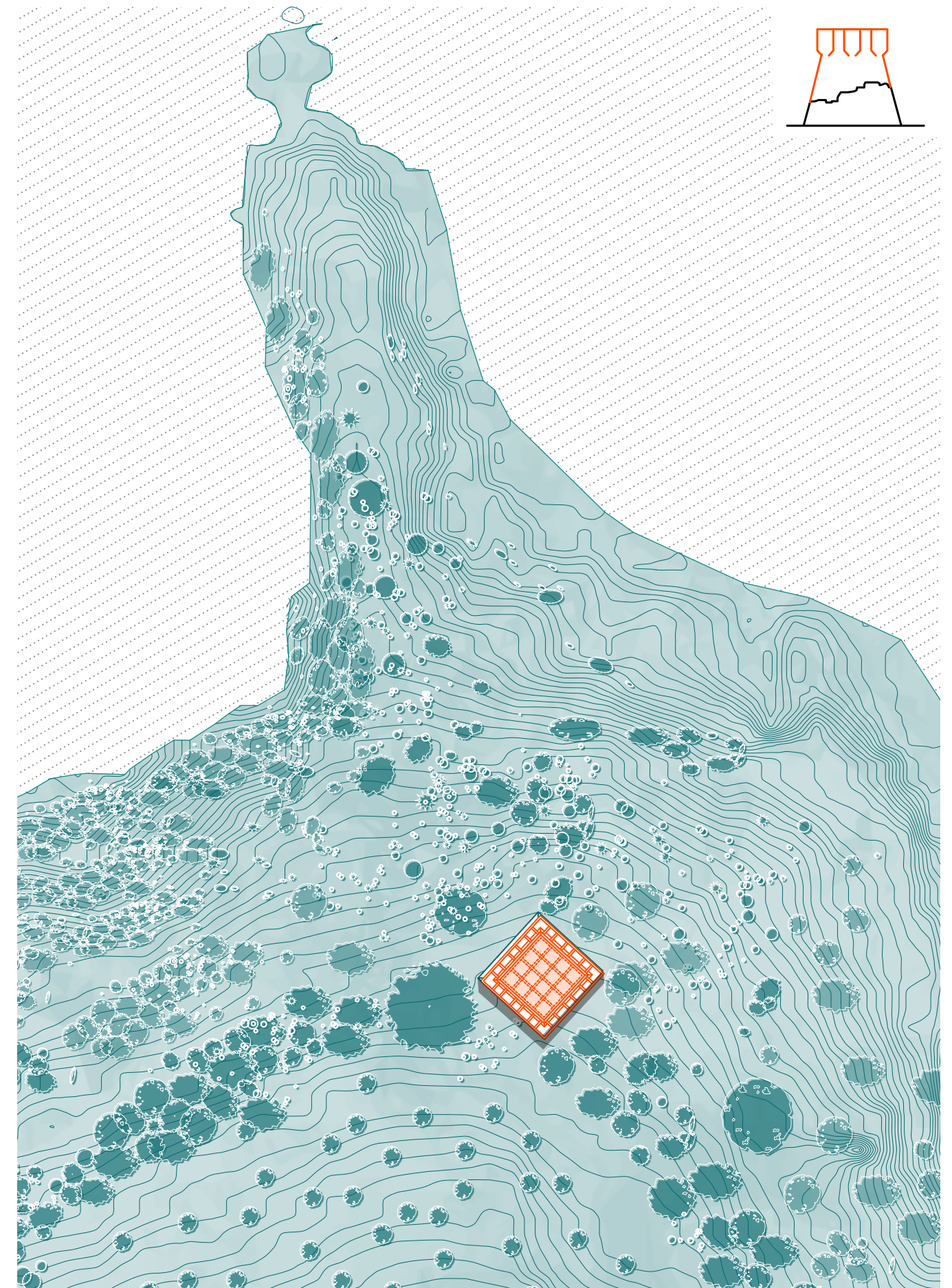
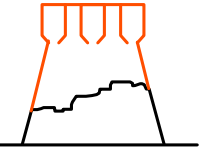


Figure 76 - Torre di Recommone - Context Plan

0 5 10 15 20 meter



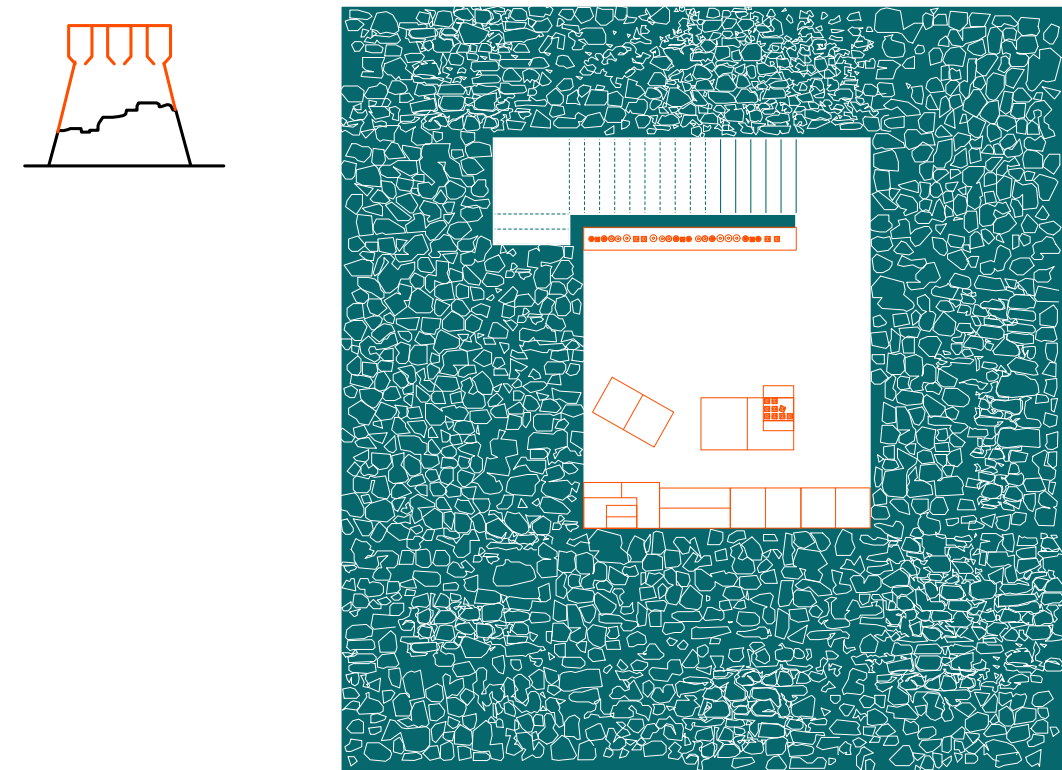


Figure 78 - Torre di Recommone - Cellar Floor

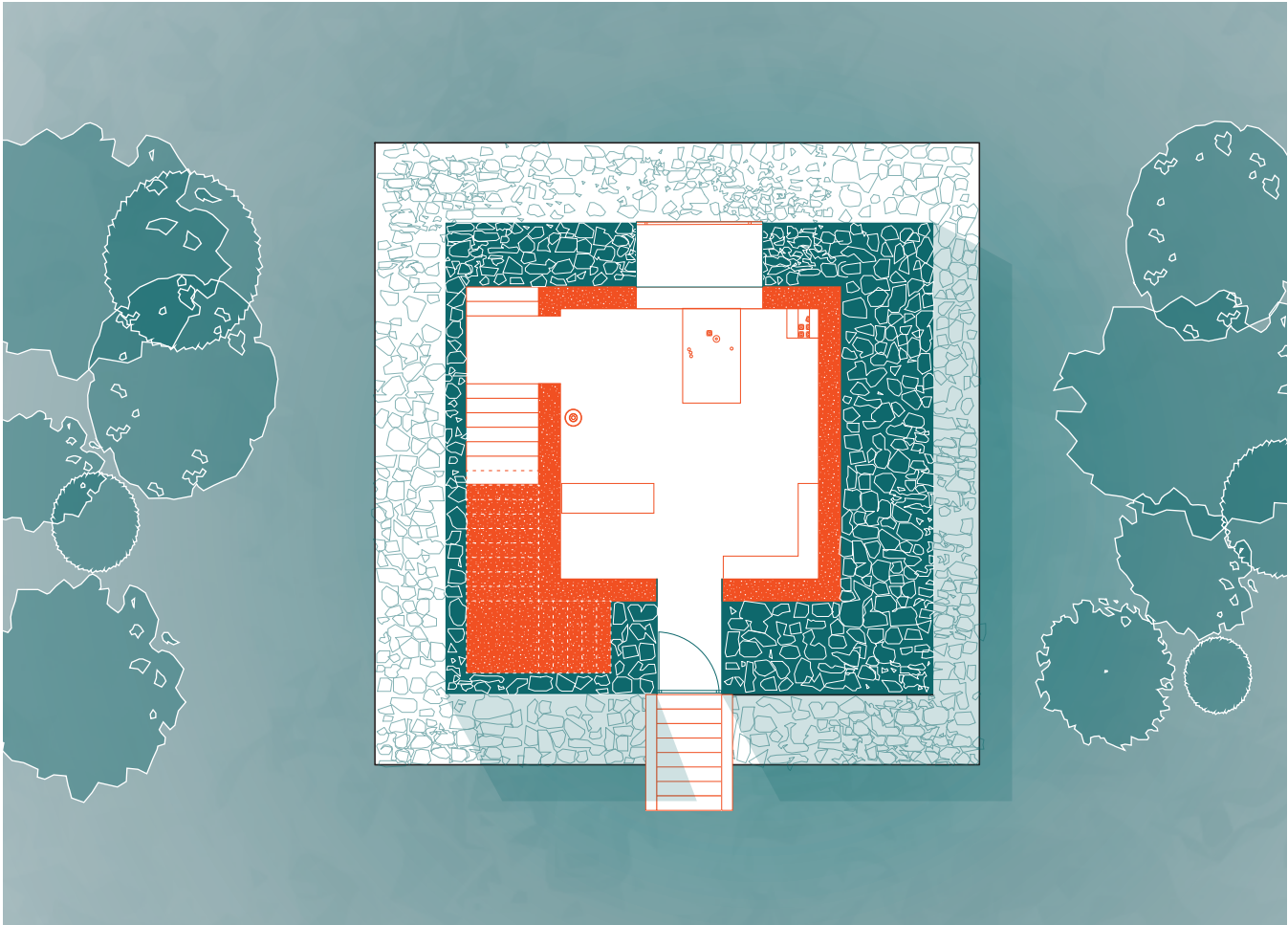


Figure 77 - Torre di Recommone - Ground Floor



Re-using Sorrento's Coastal Heritage

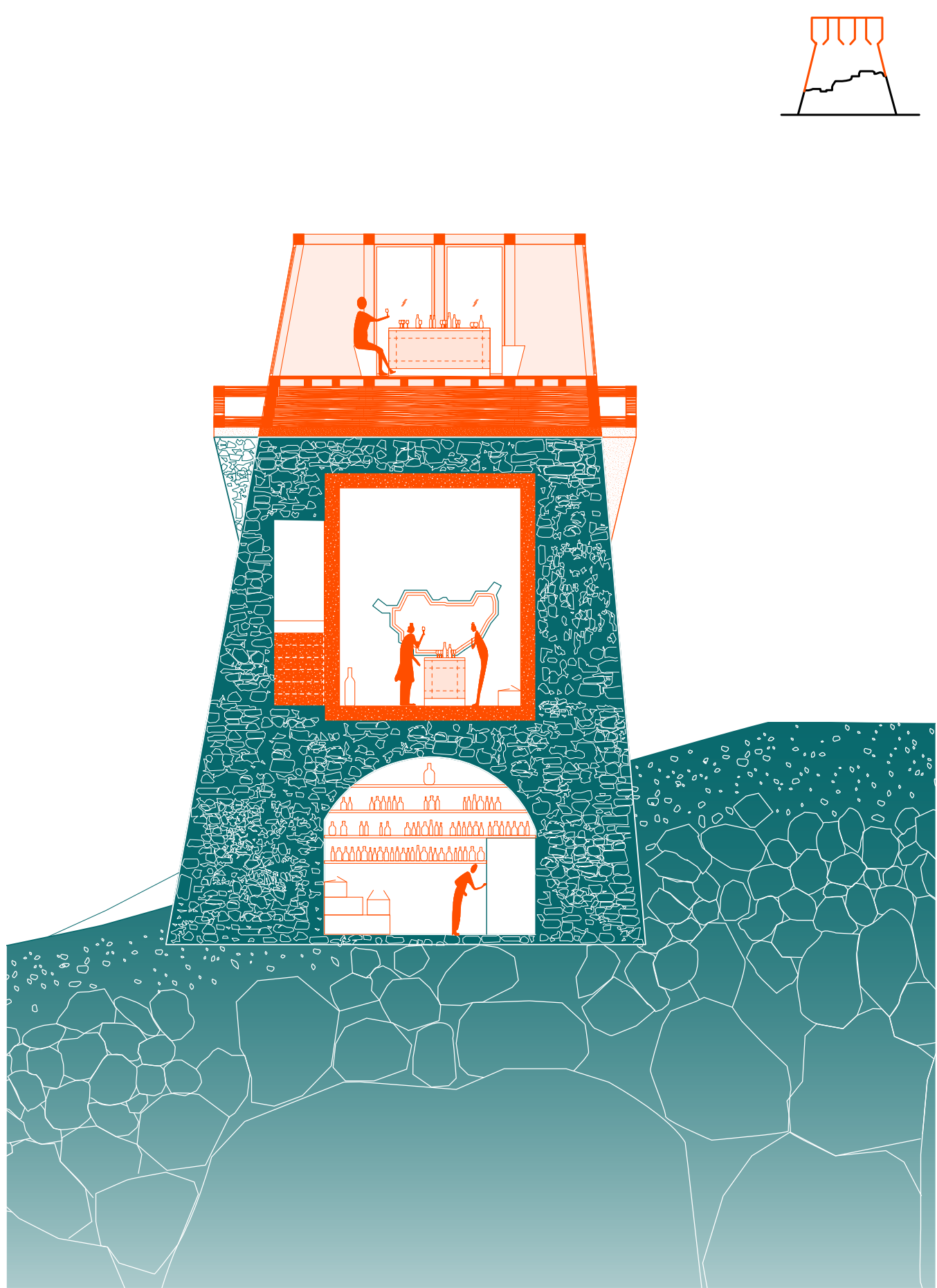


Figure 79 - Torre di Recommone - Section



Re-using Sorrento's Coastal Heritage

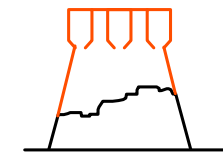


Figure 80 - Torre di Recommone - North-East Elevation

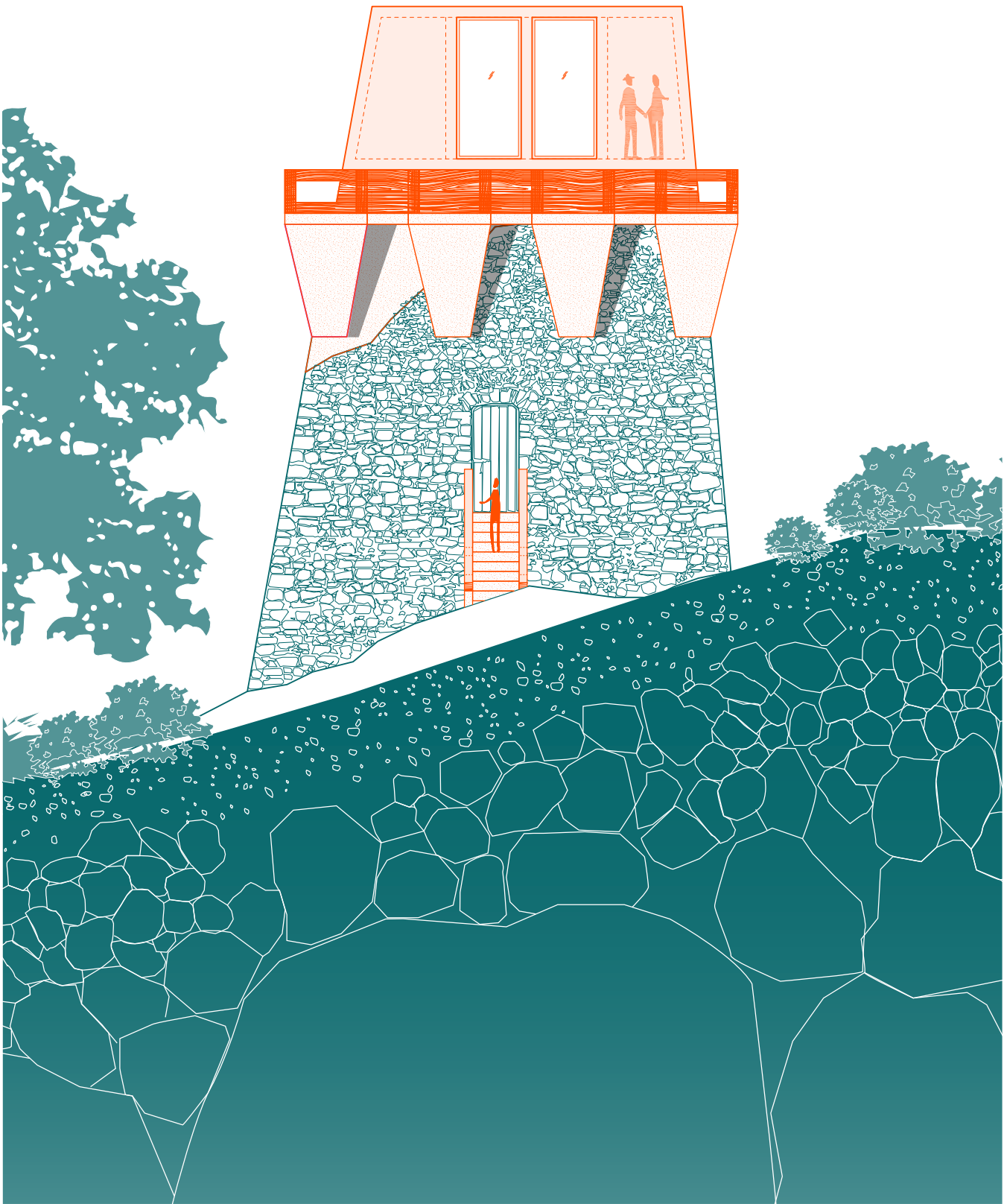
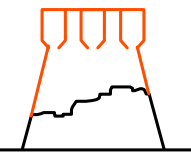


Figure 81 - Torre di Recommone - North-West Elevation



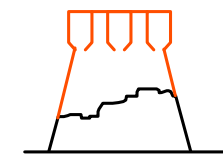


Figure 82 - Torre di Recommone - South East Elevation

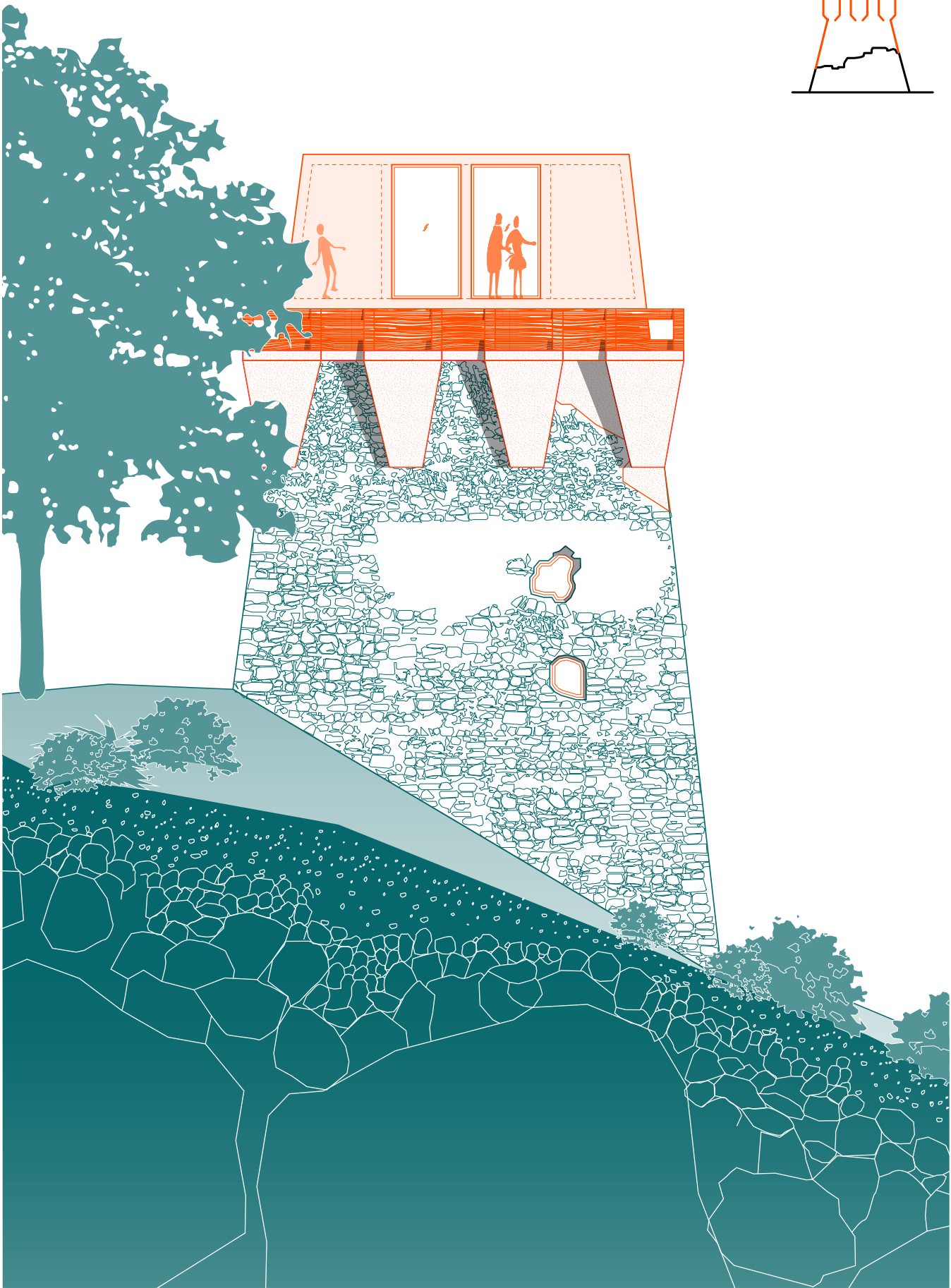
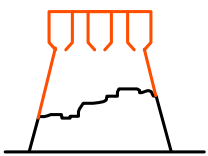


Figure 83 - Torre di Recommone - South-West Elevation



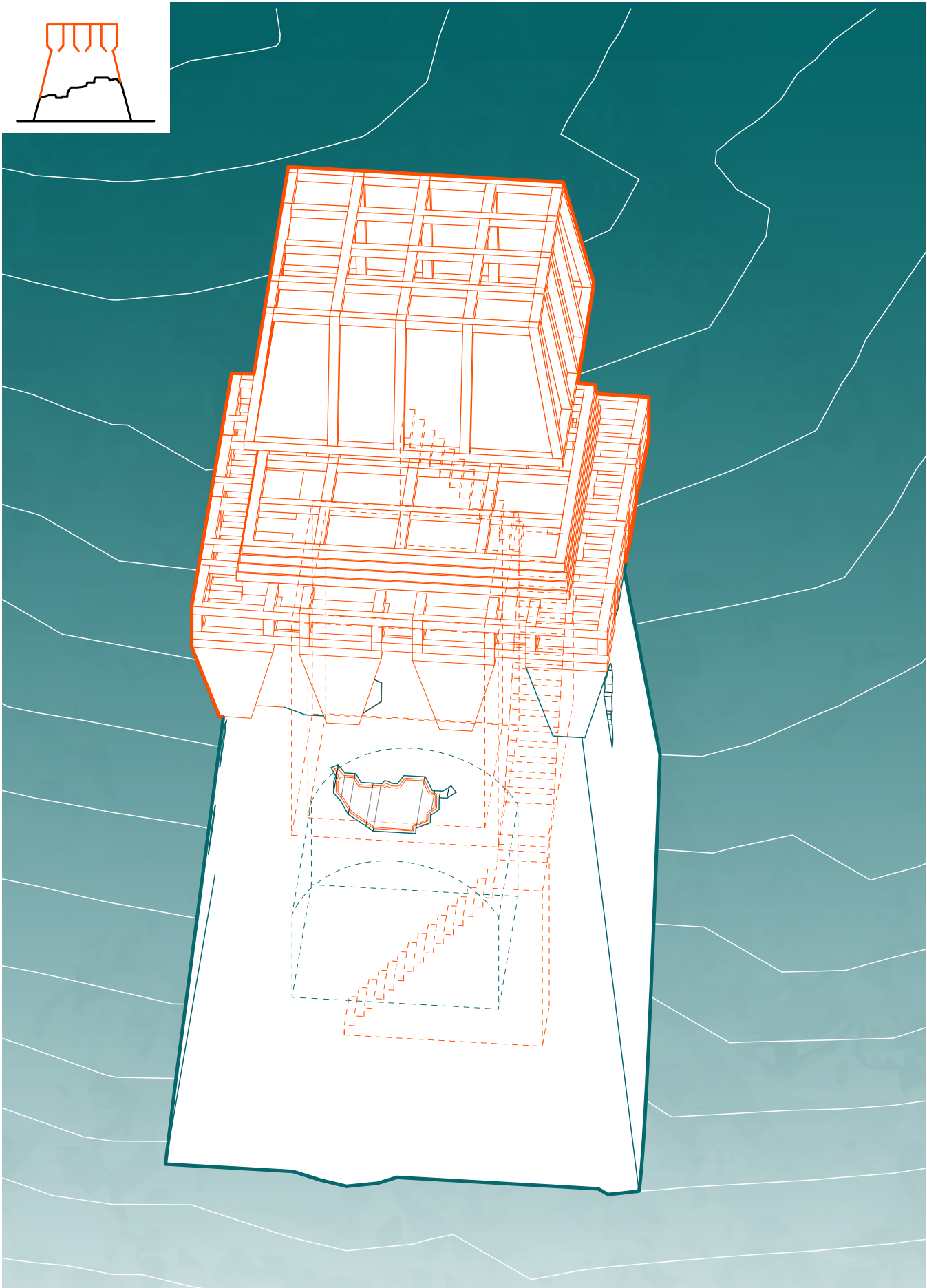


Figure 84 - Torre di Recommone - Exploded Axonometry



Interior intervention detail

- 1. Tower walls
- 2. Non-woven geotextile fabric
- 3. Lightweight concrete box
- 4. Rubber joint
- 5. Window
- 6. Collapsed window
- 7. Service table

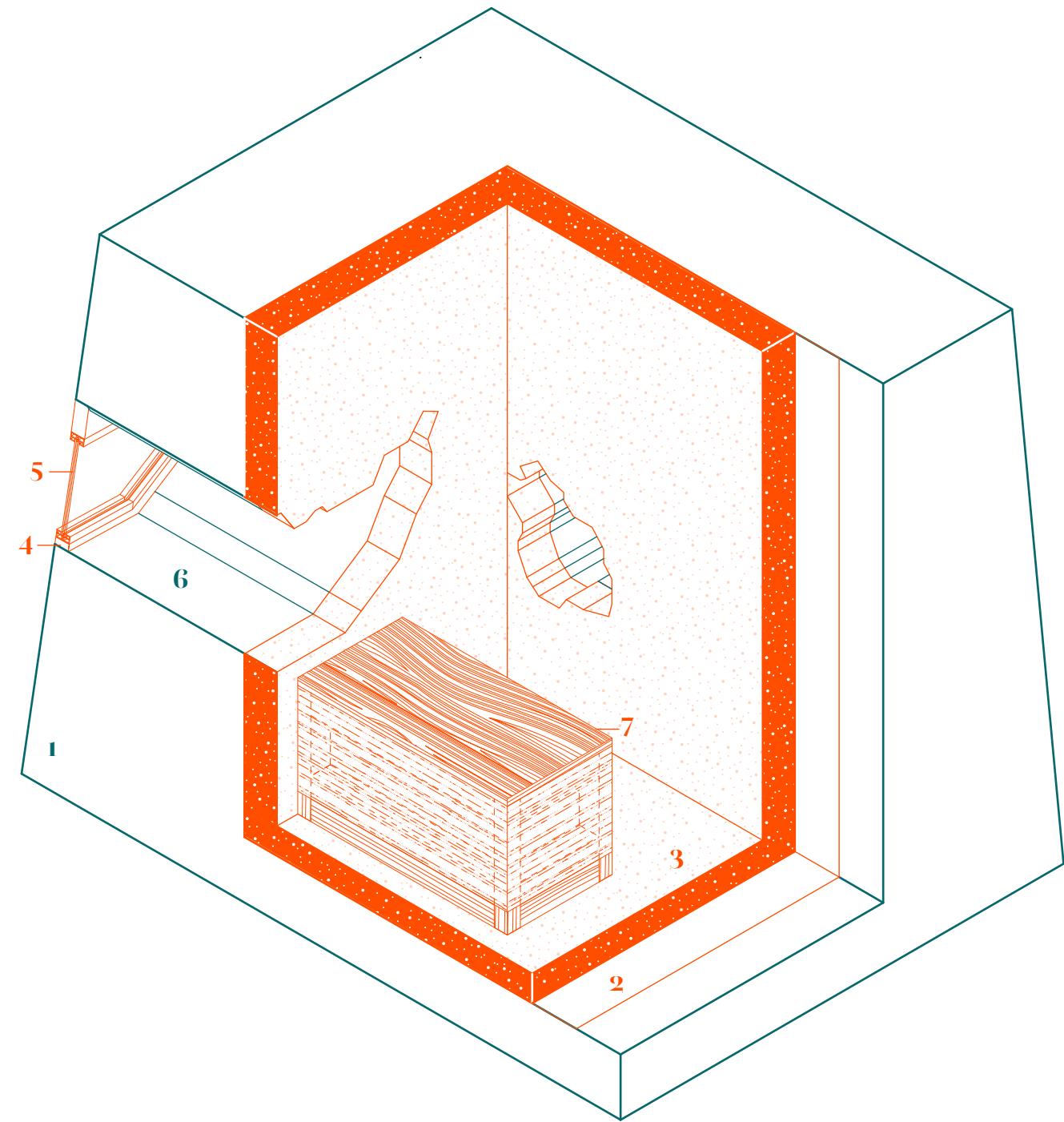
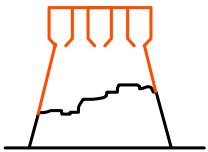
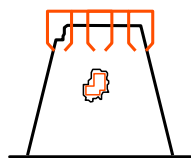


Figure 85 - Torre di Recommone - Sectioned Axonometry Detail





Torre Minerva

Torre Minerva is located on one of the most important archaeological sites of the area. Excavations put in evidence traces that show the former presence of the Phoenicians, as well as the Greek, making this tower highly significant in terms of its history, so as to propose an archaeological museum. This idea also comes from the fact that it is a plan of the city of Massa Lubrense to give to that tower that use. However, the history of the site is not the only reason, Torre Minerva being the biggest tower of the territory it also allow a more audacious and consequent intervention. The site have seen many transformation through times, from antiquity to today. We can also see on site the traces of more recent buildings that are not existing anymore. At the front of the tower, on the south site is located the traces of an old keeper house, hosting the former lighthouse, on the north west side of the tower can be seen the tracing of an other house/building.

The intervention on that site, is not only intervening on the tower, but also on the traces of the other buildings, in order to recreate call back to the entire boundary of the site. It also allows to create different spaces for the museum. Those two side intervention, are constructed as light wooden and fabric boxes, similarly to the extension on the top of the tower. The wooden structure has been realized with traditional dovetail connections, and the sail cloth fabric is attached to these timber beams using nails. They are built elevated from the ground in order to keep the traces visible.

The intervention on the tower consist of reinforcing and filling the gaps due to the collapses that happened through the past with the use of light weight concrete, on a non-woven geotextile that acts as a protection layer to the existing masonry making the approach reversible. The historical openings are closed with custom made windows, integrated with the creation of a rubber joint in order to regularize the edges for the window to be placed.

The interior staircase being in a good state of conservation is used in order to reach the roof where the stairs are extended with more steps in order to access to the top extension built similarly as the one built on top of Torre di Recommone. That extension is supported thanks to the recreation of the historical battlement system as a combination of concrete for the corbels, and wood for the merlon.

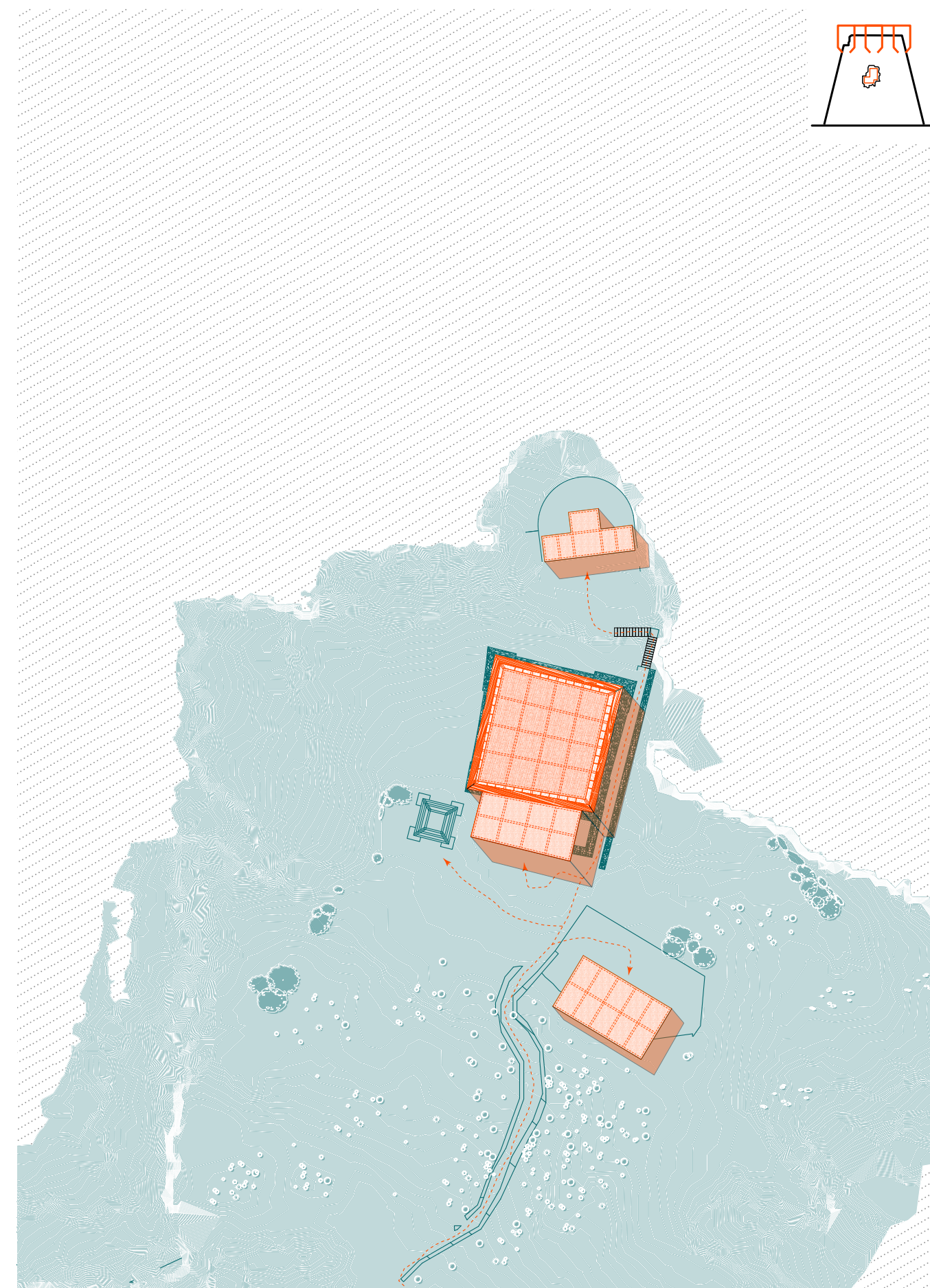
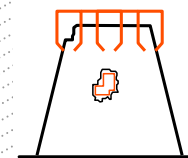


Figure 86 - Torre Minerva - Context Plan

0 5 10 15 20 meter



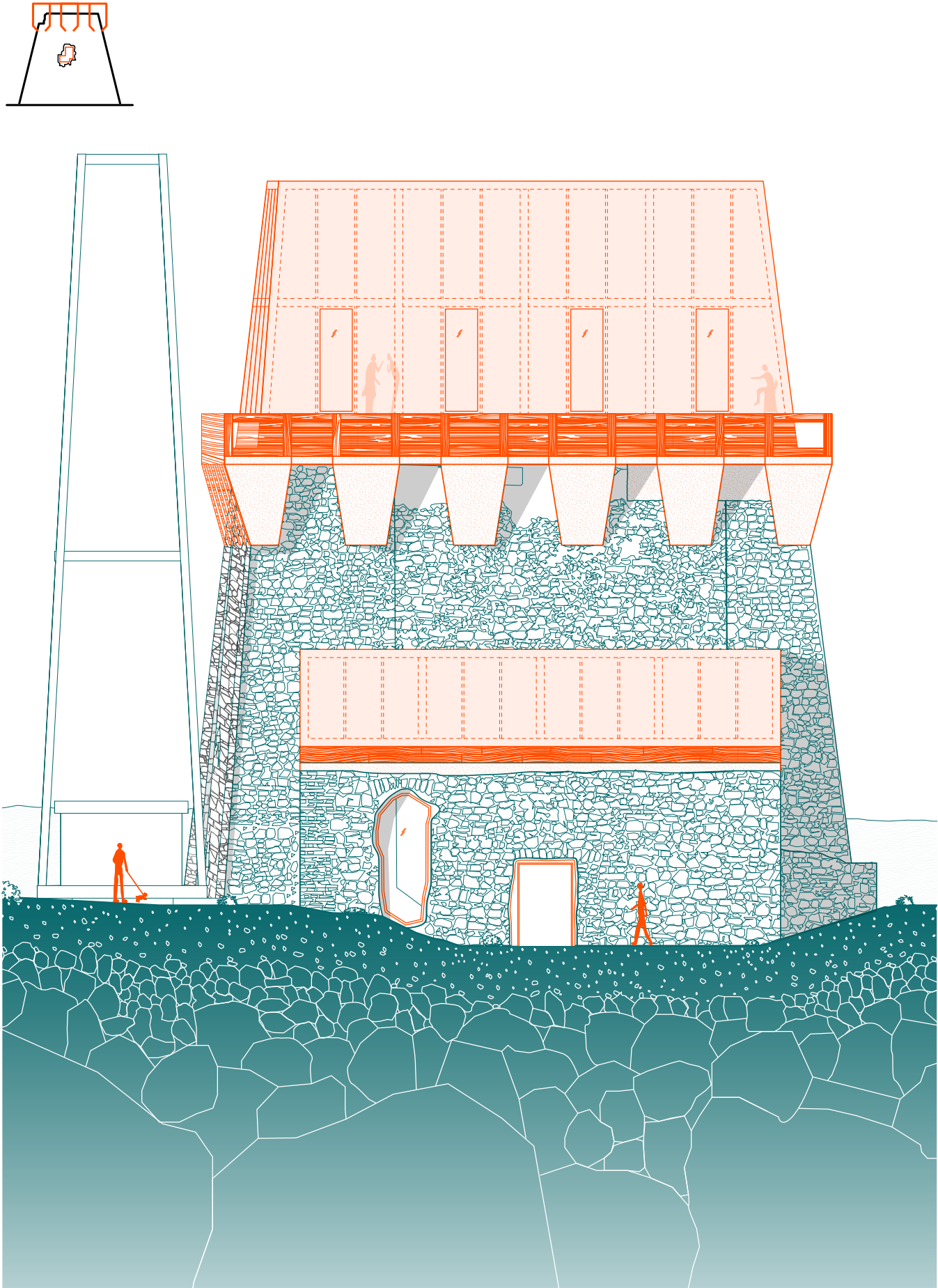


Figure 87 - Torre Minerva - North Elevation

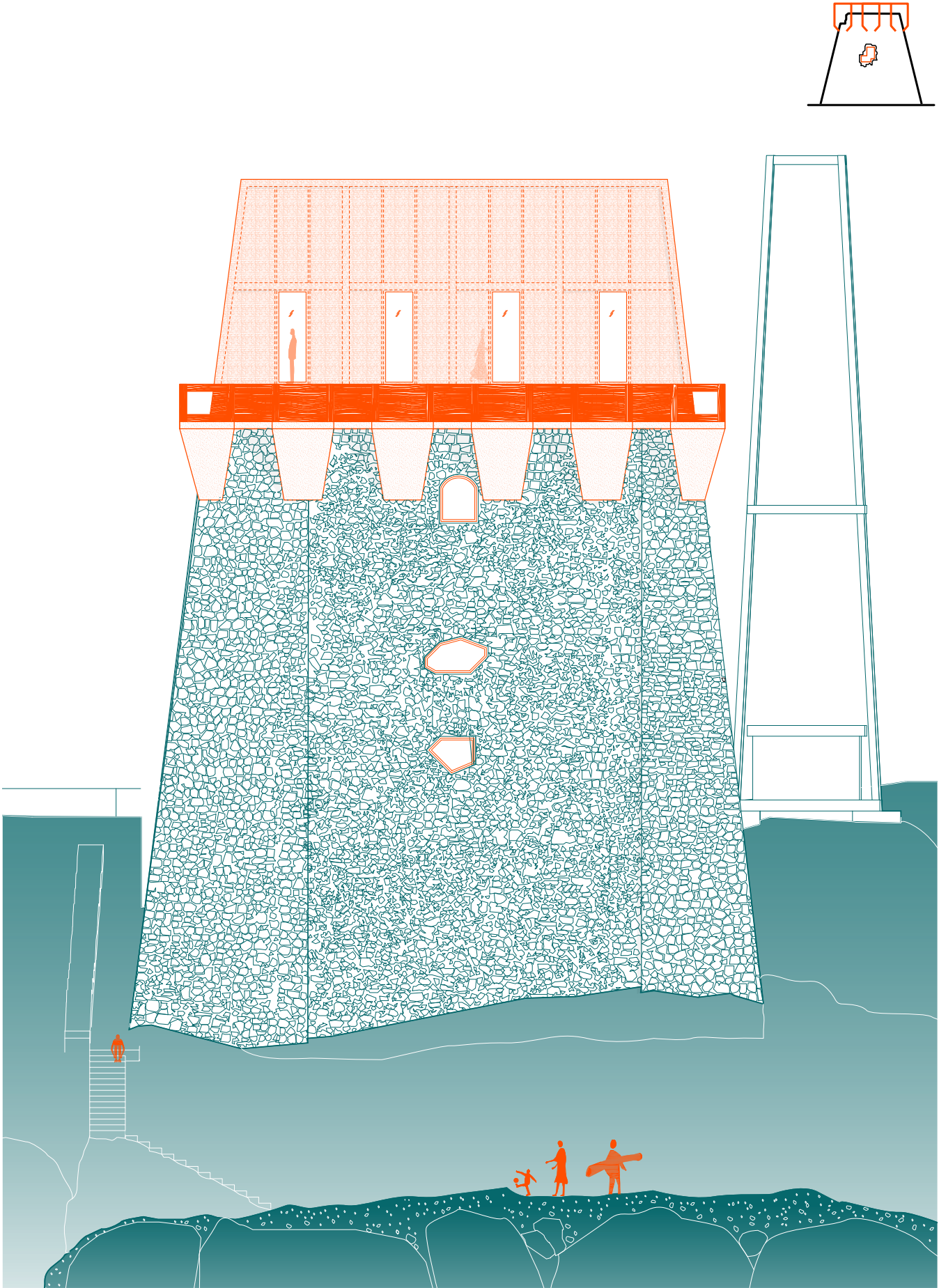


Figure 88 - Torre Minerva - South Elevation

meter 0 2 4 6 8
Re-using Sorrento's Coastal Heritage

0 2 4 6 8 meter
Re-using Sorrento's Coastal Heritage

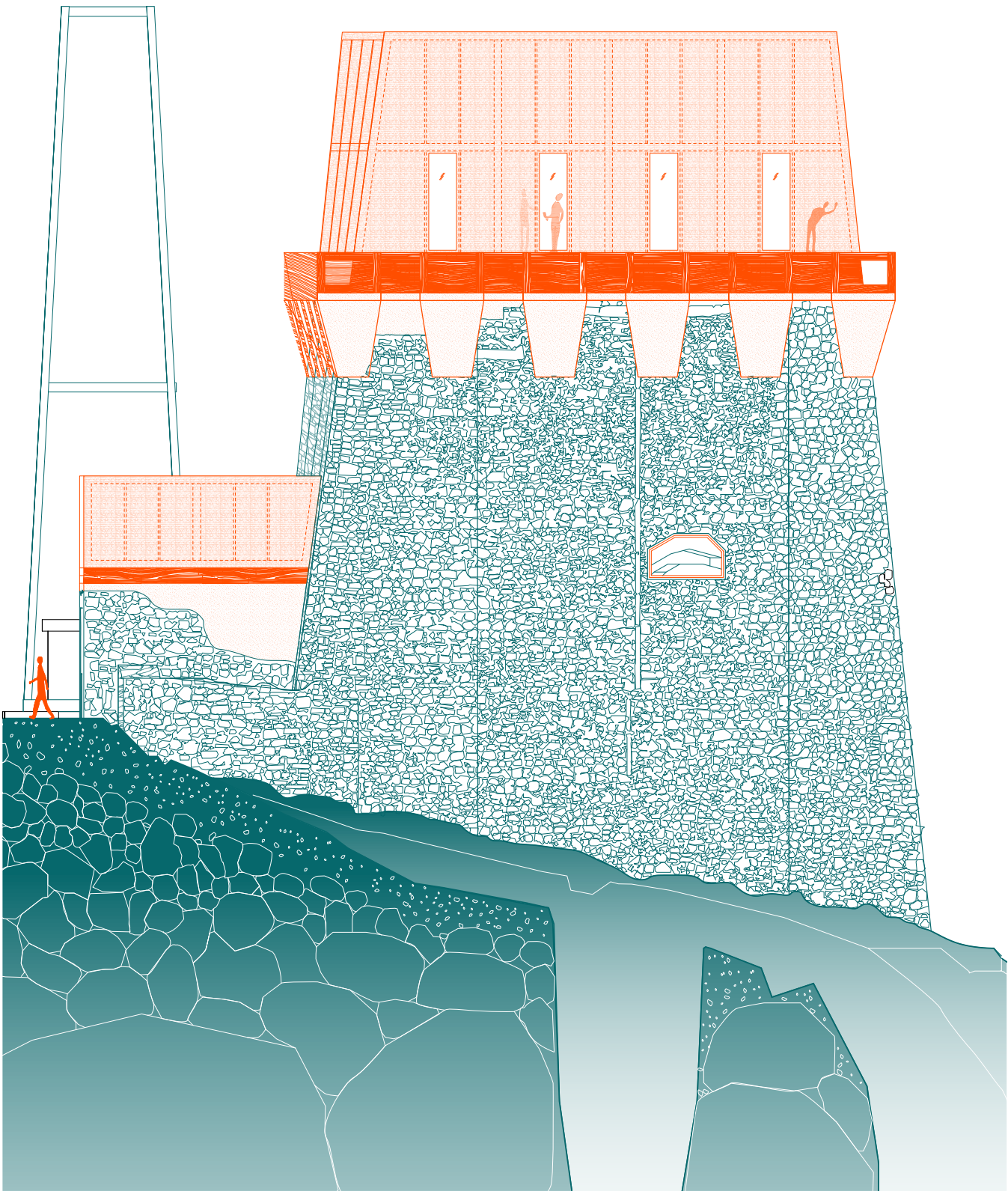
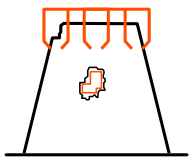
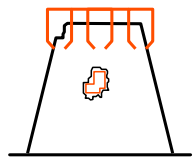


Figure 89 - Torre Minerva - West Elevation

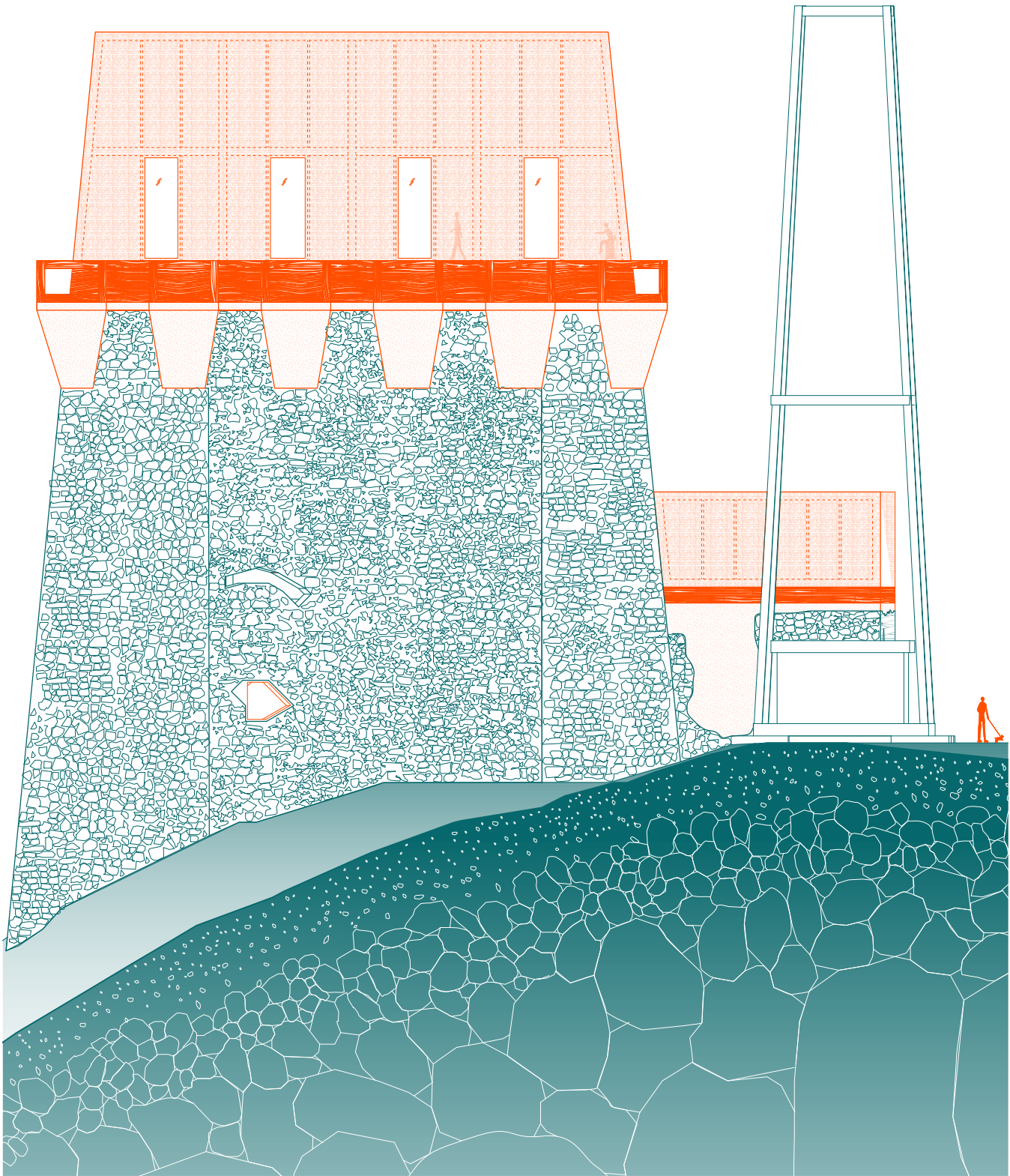


Figure 90 - Torre Minerva - East Elevation

meter 0 2 4 6 8
Re-using Sorrento's Coastal Heritage

0 2 4 6 8 meter
Re-using Sorrento's Coastal Heritage

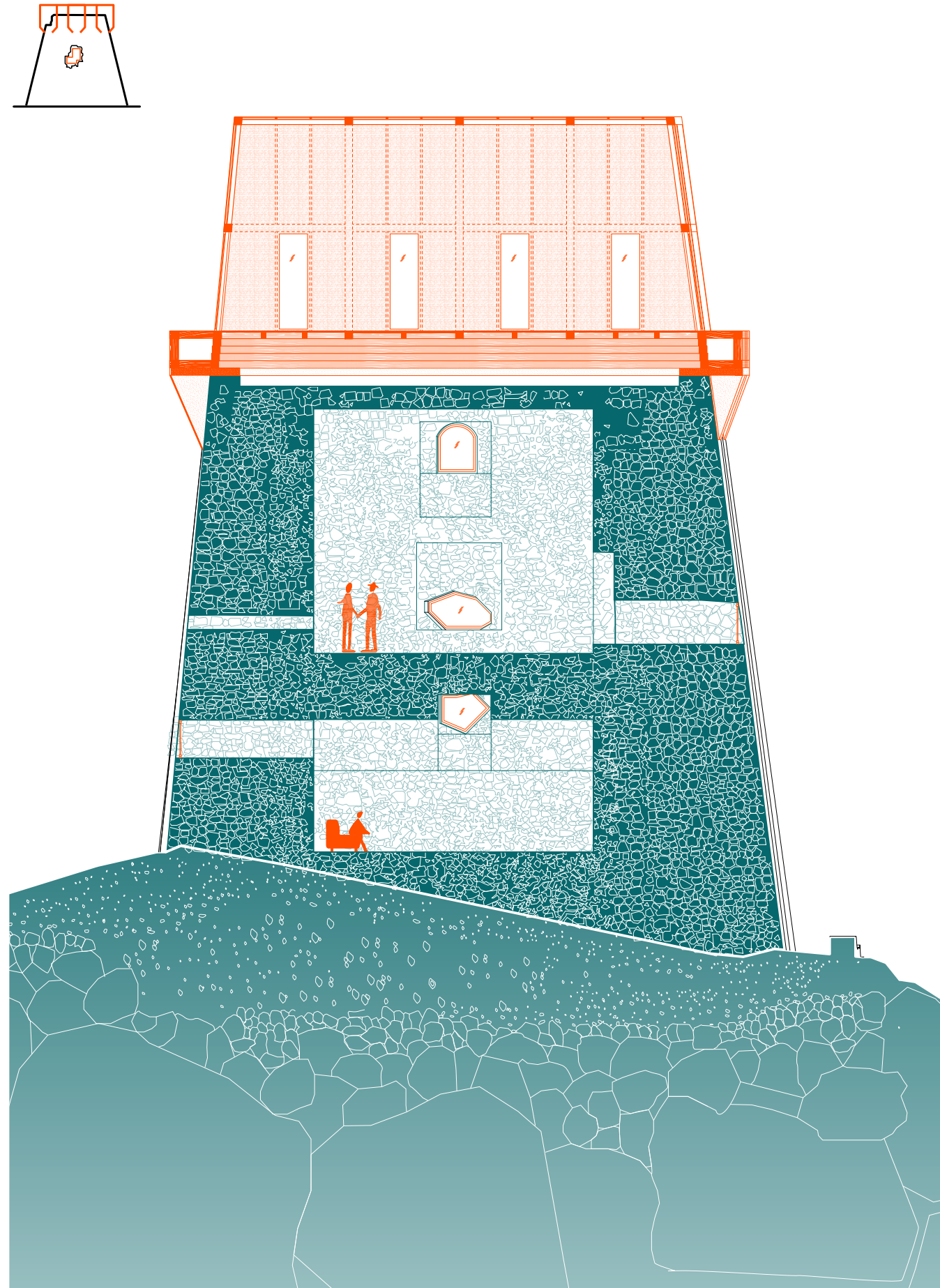


Figure 91 - Torre Minerva - East-West Section

meter 0 2 4 6 8
Re-using Sorrento's Coastal Heritage

1. Tower walls
2. Non-woven geotextile fabric
3. Poured lightweight concrete
4. Wooden beams dovetail joined
5. Metal pin
6. Metal corner joint
7. Polyester membrane
8. Metal split joist
9. Mylar laminate fabric
10. Secondary wooden frame

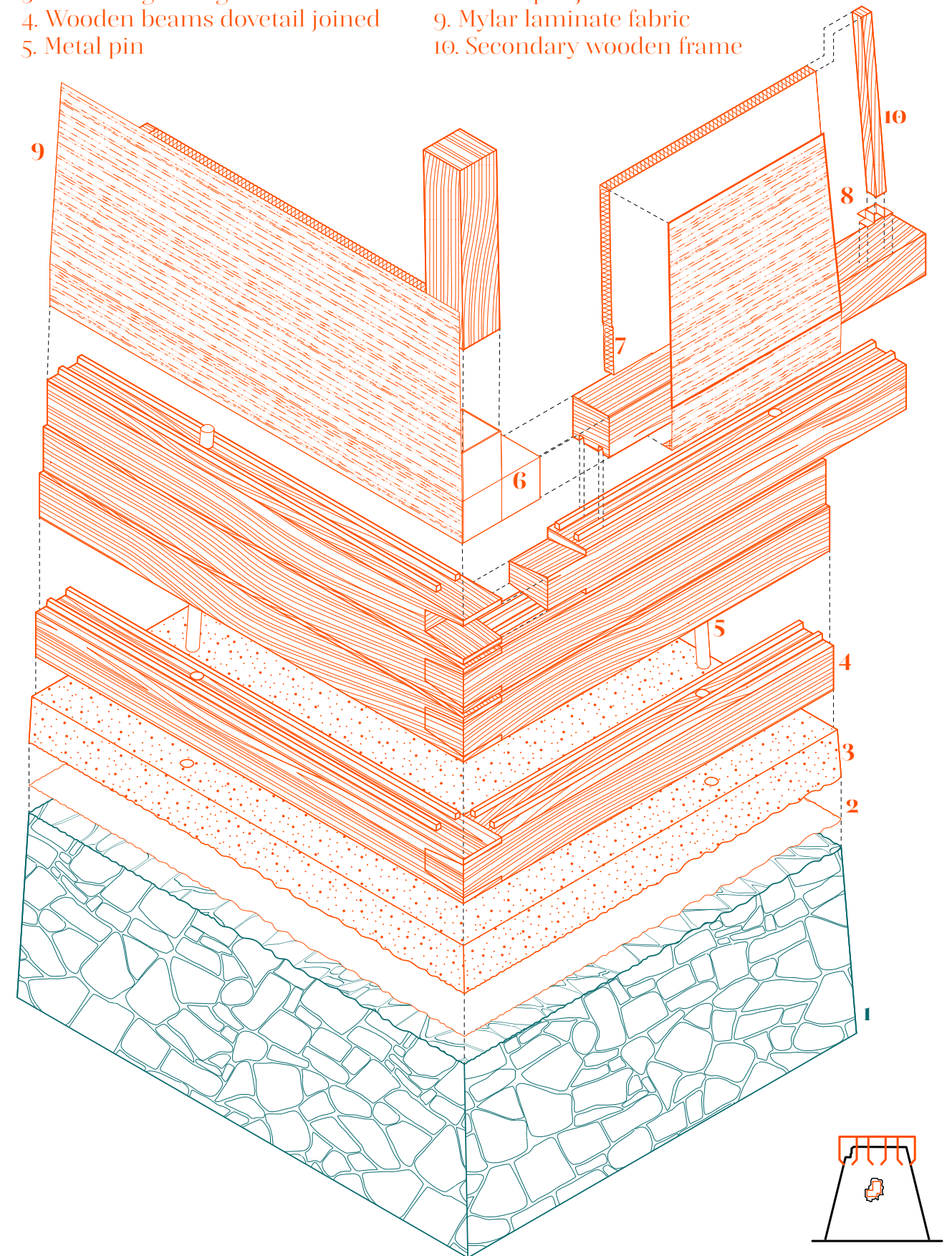
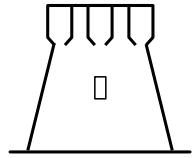


Figure 92 - Torre Minerva - Exploded Axonometry detail

0 0.2 0.4 0.6 0.8
meter
Re-using Sorrento's Coastal Heritage



Torre di Capo di Massa

In the best state of conservation among all the watchtowers of Massa Lubrense, Torre di Capo di Massa has been chosen to represent a different type of museum, due to its location on the extremity of the previously discussed sustainable path. In other words, its vicinity to the main town of Massa Lubrense, as well as being at the beginning or end of the touristic path, it has been considered relevant for it to showcase the aspect of the history regarding the general role of such watchtowers.

From a structural point of view, only the crenelations have been re-built in concrete and wood while most of the intervention has been proposed to be done inside, by designing the furniture, using similar materiality and technique as the architectonic part of the reuse.

The ground floor includes a canon to represent the type of artillery used at the time in the towers, together with custom-designed frames to host illustrations to exhibit events related to the history. This floor also includes remaining artifacts used in these buildings. On the first floor, there exists four pedestals on which the typology of towers encountered in Massa Lubrense are depicted as maquette. To finish the visit, is designed on the parade ground a table of orientation, highlighting the presence of the other towers in the surroundings.

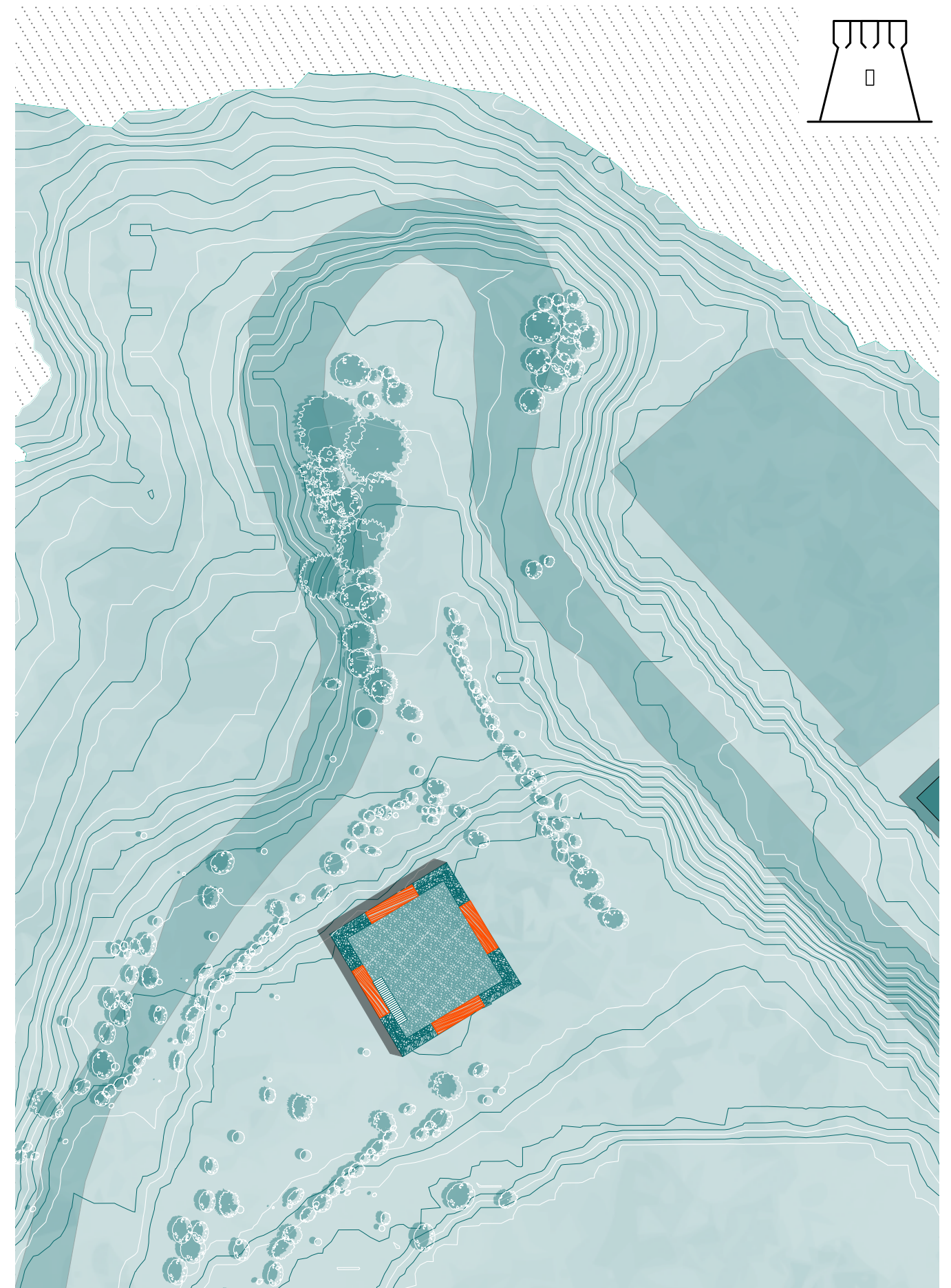


Figure 93 - Torre di Capo di Massa - Context Plan

0 5 10 15 20 meter



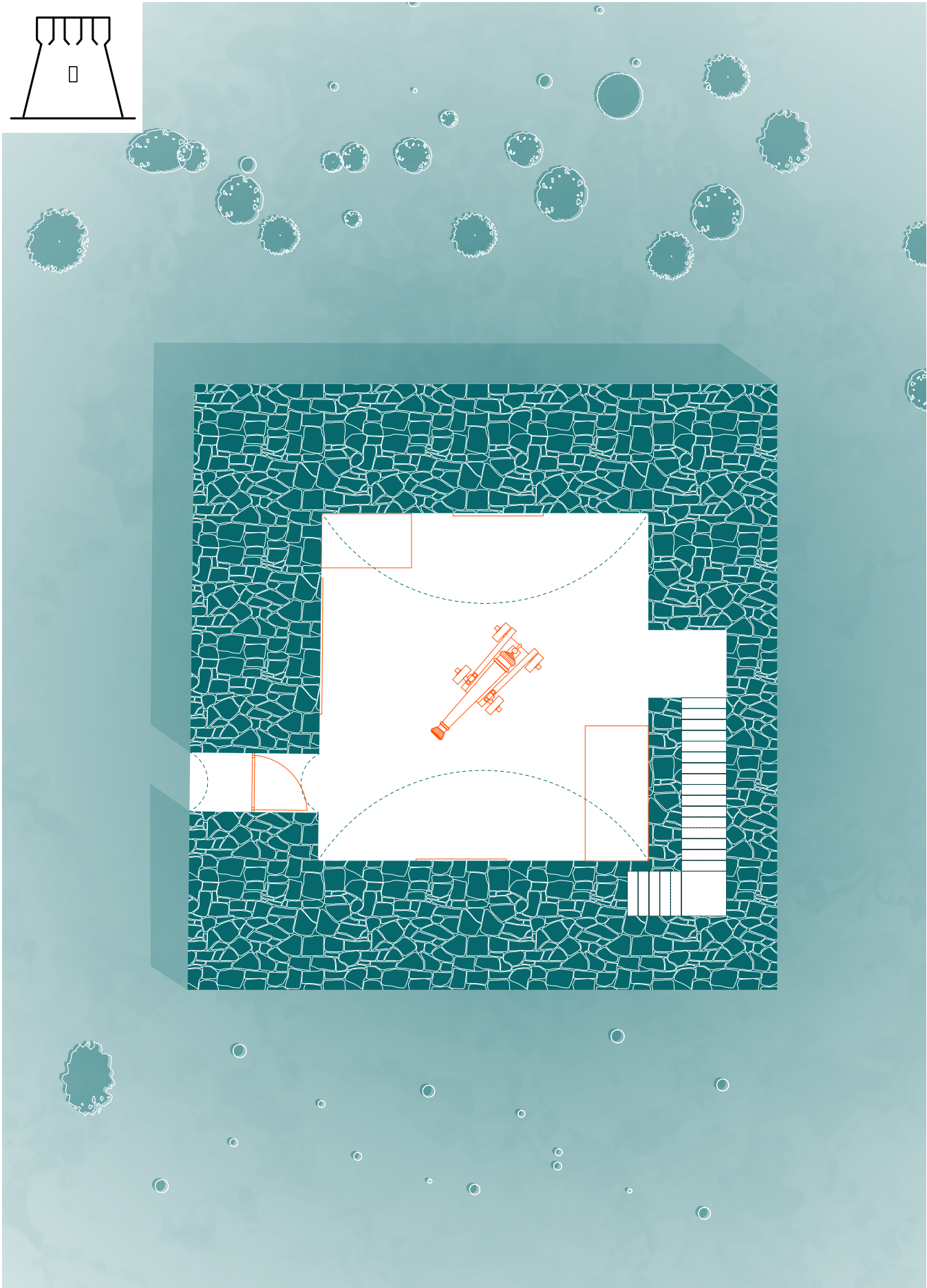


Figure 94 - Torre di Capo di Massa - Ground Floor Plan

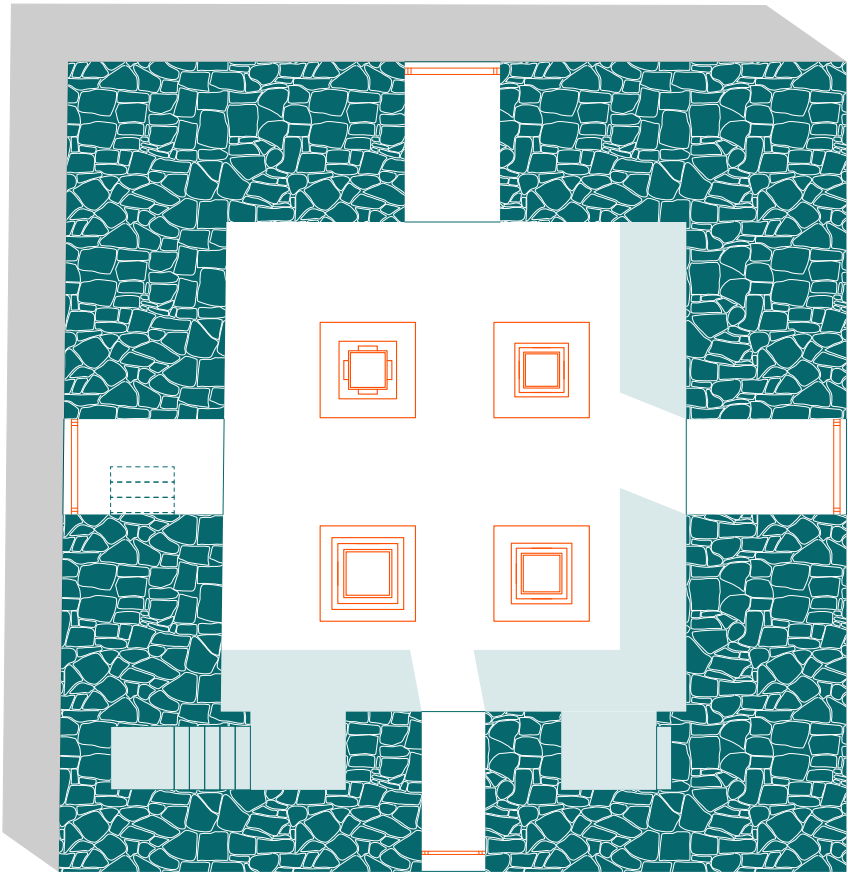


Figure 95 - Torre di Capo di Massa - First Floor Plan



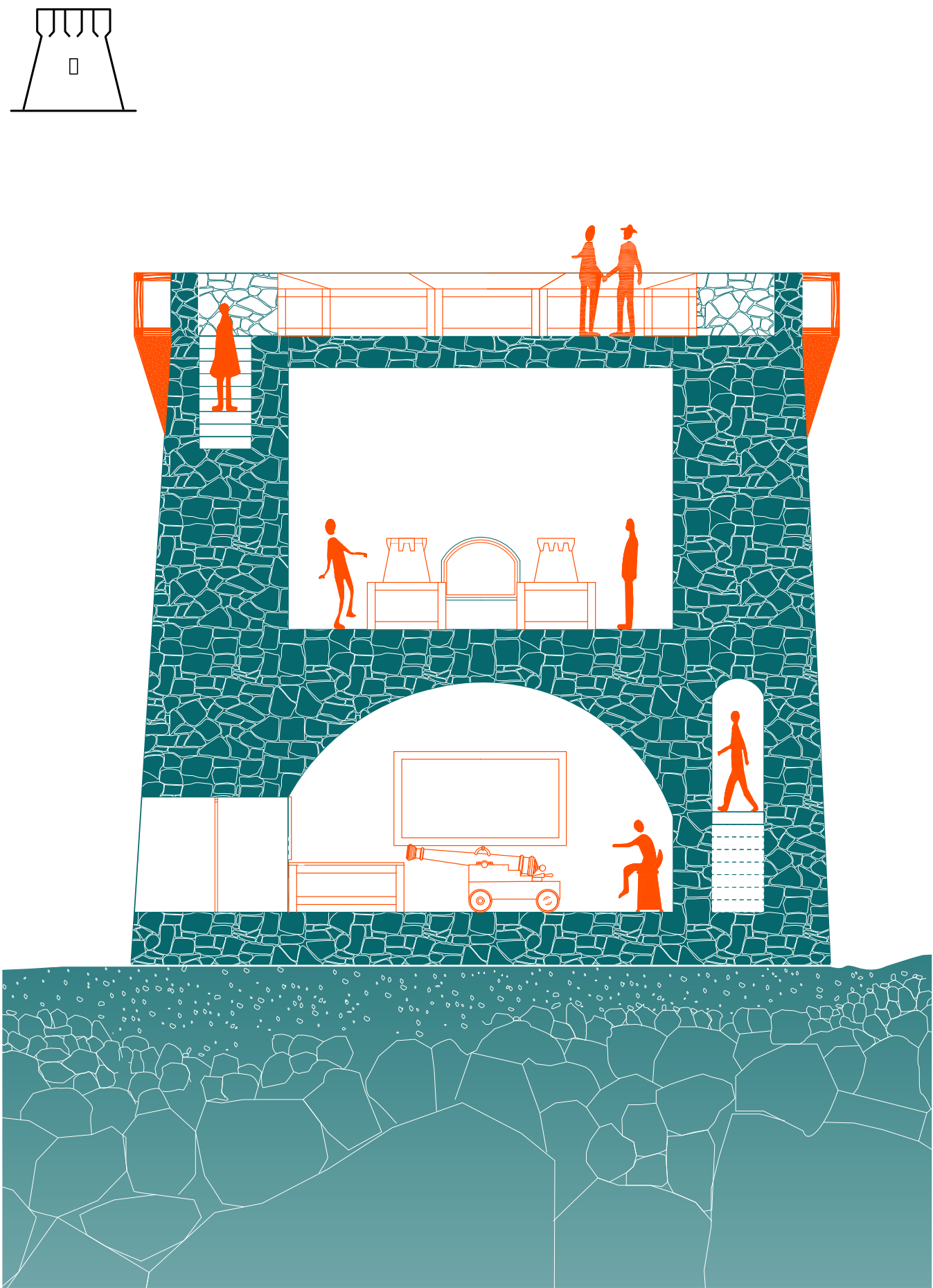


Figure 96 - Torre di Capo di Massa - Section



Table of orientation

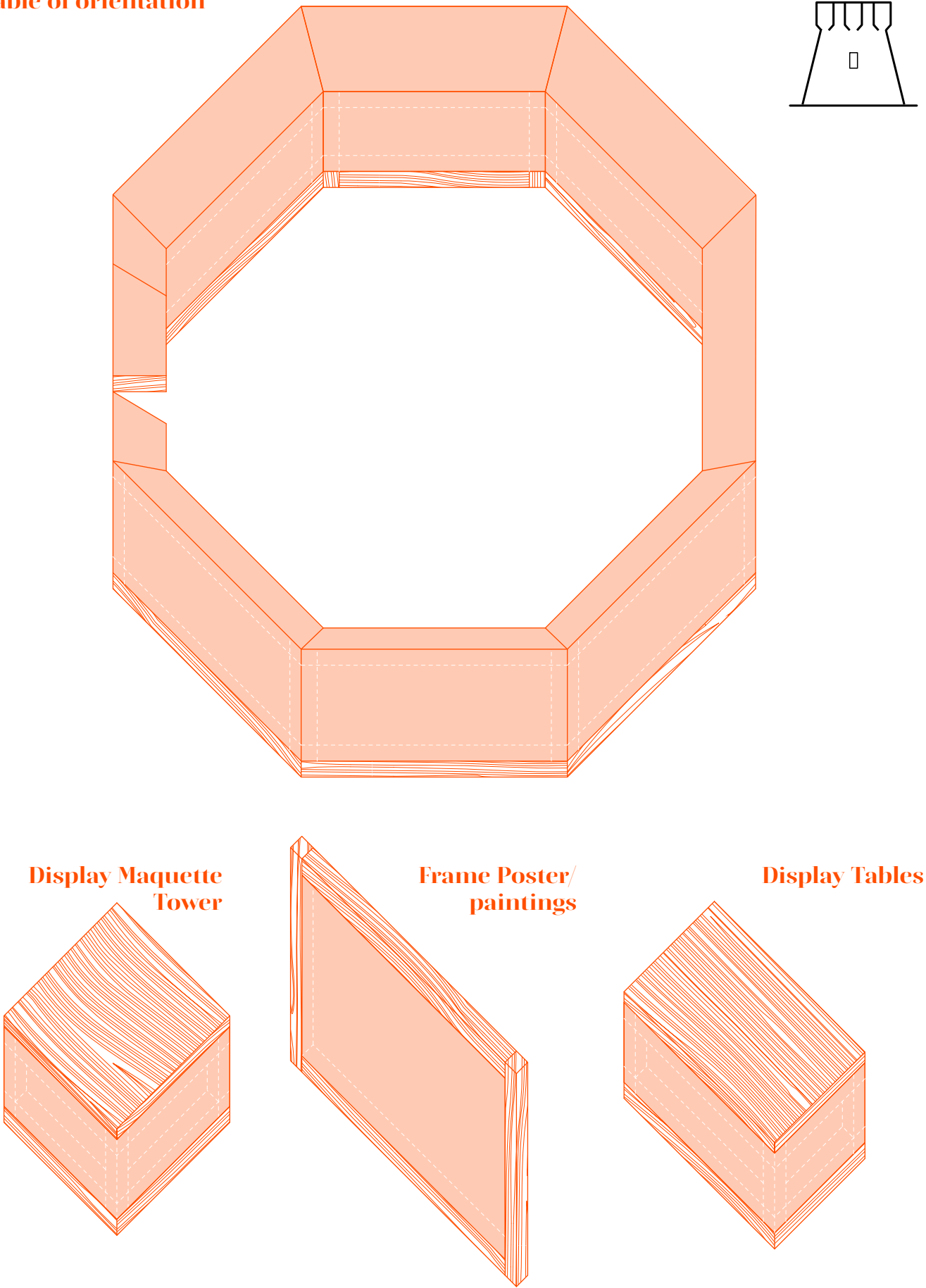


Figure 97 - Torre di Capo di Massa - Detail Furniture



VII. Conclusion

The purpose of this thesis has been to understand and revive the local coastal watchtower system within the town of Massa Lubrense, located on the Sorrento Peninsula in Italy, by creating a green touristic path linking the towers, in addition to the architectural intervention on both the towers and the path.

The territory has been analyzed through the use of ArcGIS Pro, in order to define the most suitable path considering factors such as the quality and the typology of the roads, the topography, etc. The conclusion of that analysis led to design a mixed-user path for bikers and pedestrian.

In order to define the ideal path, a network analysis within ArcGIS pro has been realized using the results gathered from the territorial analyses. The roads and the topographic information have been combined to detect the potential proper segments of the transportation network according to the targeted users. Such combination served as the base of the Network Analysis, which included Travel Mode, Costs and Restrictions as attributes set according to the users requirements. Considering those attributes, the final path has been obtained using the Route solver.

The path has then been architecturally designed in order to answer the remaining constraints of the GIS-obtained path. Based on the context of the different segments of the path, four types of segments have been identified with three needing an architectural solution to be designed. In addition, the installations, the furniture and the signage present along the route, were shaped taking inspiration from the towers' architectural features.

The architectural focus of this thesis has been to revive the towers with regards to their actual state of conservation, proposing solutions adaptable to towers belonging to the similar conservation typologies. Those solutions were presented on four towers corresponding to the identified categories. The interventions have been realized through a non-invasive and reversible strategy by reinforcing the existing and recreating the missing parts, prior to the creation of an addition if necessary. For that matter, the recreation of the missing parts has been realized with lightweight concrete, separated from the existing with a non-woven geotextile membrane. This concrete layer marks the transition between the existing layer and the addition. The latter has been built using a timber structure assembled thanks to dovetail joints, enclosed by sail cloth nylon fabric. Their function has been selected considering their locations within the path and the settings of their immediate surroundings.

Through this approach, the project uses the new path as a means to bring the towers back into dialogue with the landscape, allowing them to function once again as active elements of the territory rather than silent remnants of the past.

This work is only focusing on the watchtowers of Massa Lubrense, but it attempt to propose a methodology combining territorial analysis, network based planning and adaptive reuse for sustainable tourism, that could be replicated, considering the existence of an approximately 400 kilometers coastal watchtower network, along the Italians coastlines. Considering the specificities of the territories in which those towers exist, that methodology could serve as a reference. In order to extend this approach to a national scale, the realization would need an

interdisciplinary collaboration. For that matter, this project should not be understood as a finished model but as the first step toward a broader strategy for reconnecting Italy's dispersed coastal heritage.

VIII.

Bibliography

Books:

Ercolino, Romolo. *Sentinelle di Pietra: Le torri di guardia e di difesa della Costiera di Amalfi e di Sorrento. Castellammare di Stabia*: Longobardi, 2022.

Fondi, M., L. Franciosa, L. Pedreschi, and D. Ruocco. *La casa rurale nella Campania*. Florence: L. S. Olschki, 1964.

Maldacea, Gennaro. *Storia di Massa Lubrense*. Italy: tip Flautina, 1840.

Russo, Flavio. *Le torri anticorsare vicereali: con particolare riferimento a quelle della costa campana*. Rome: Istituto Italiano dei Castelli, Sezione Campania, 2001.

Russo, Flavio. *Le torri vicereali anticorsare della costa d'Amalfi: Immagini e suggestioni della guerra di corsa*. [S.l.]: Centro di Cultura e Storia Amalfitana, 2002.

Russo, Valentina, ed. *Landscape as Architecture: Identity and Conservation of Crapolla Cultural Site*. Florence: Nardini Editore, 2014.

Articles:

Dominici, Laura, Simone Valentino Piscopiello, and Elena Comino. "Design Process for Improving Bike-Lane Networks and Enhancing the Heritage of Almesè, Italy." *The International Journal of Architectonic, Spatial, and Environmental Design* 13, no. 2, 2019. 51–71.

Ferreyra, Carla, Barbara Messina, and Sara Morena. "Rediscovering Tradition through Representation: The Vaulted House of the Amalfi Coast." In *HERITAGE 2022 – International Conference on Vernacular Heritage: Culture, People and Sustainability*, Valencia, Spain, September 15–17, 2022. Valencia: Editorial Universitat Politècnica de València, 2022.

García-León, Josefina, Torres-Picazo, Manuel, and García-Fernández Gregorio. "Sustainable tourist route among the medieval coastal towers of the Mar Menor." *Zenodo*. 2025

Matrone, Tommasina. "Il santuario che non c'è. Identificazione e localizzazione del Minervium di Punta della Campanella." In *Sanctuaires et paysages. La (re)découverte des lieux de culte en Méditerranée centrale et orientale*, edited by Daniela Lefèvre-Novaro and Corentin Voisin. Strasbourg: Université de Strasbourg, 2025. 364–73

Montes Serrano, Carlos. "Louis Kahn en la costa de Amalfi (1929)." *RA: Revista de Arquitectura*, no. 7 2005. 19–30.

Pollone, Stefania, and Lia Romano. "Transformations and Permanences of Landscape and Architecture: The Minerva Tower of Punta Campanella in the Sorrento-Amalfi Peninsula." In *Defensive Architecture of the Mediterranean: XV to XVIII Centuries, Vol. II*, edited by Pablo Rodríguez-Navarro. Valencia: Editorial Universitat Politècnica de València, 2015. 273–280.

Websites:

ALBELI RENTALS. *Torre Punta Campanella*. Accessed May 24, 2026. <https://albeli.it/rentals/torre-punta-campanella#gallery>

AllTrails. *Ciclopista dal Garda – Limone del Garda – Trento Confine*. Accessed November 15, 2025. <https://www.alltrails.com/trail/italy/lombardy/ciclopista-dal-garda-limone-del-garda-trento-confine>.

ArchDaily. *Restoration of Castell de la Tossa / Meritxell Inaraja*. Accessed June 2026. <https://www.archdaily.com/951752/restoration-of-castell-de-la-tossa-meritxell-inaraja>.

Camí de Cavalls 360. "Home." *Camí de Cavalls 360*. Accessed November 15, 2025. <https://www.camidecavalls360.com/en/>

Camí de Cavalls. "Publicacions: Llistat." *Camí de Cavalls*. Accessed November 15, 2025. <https://www.camidecavalls.com/Publicacions/llistat.aspx?tipo=02>

Cammini.eu. "Sentiero del Viandante, Lombardia." *Cammini.eu*. Accessed November 15, 2025. <https://www.cammini.eu/viaggi/sentiero-del-viandante-lombardia/>

Chilitri. "Exploring the Senda Litoral on Foot: A 200-Kilometre Coastal Adventure on Spain's Costa del Sol." *Chilitri Blog*. Accessed November 15, 2025. <https://www.chilitri.com/blog/karenparnell01@hotmail.com/exploring-the-senda-litoral-on-foot-a-200-kilometre-coastal-adventure-on-spain-s-costa-del-sol>

Divisare. *Consolidation of the Castle of Matrera*. Accessed June 2026. <https://divisare.com/projects/312933-carlos-quevedo-rojas-consolidation-of-the-castle-of-matrera>.

Escursionista.it. "Trekking delle Torri Costiere in Salento Vol. 1: Atlante Litorale Adriatico." *Escursionista.it*. Accessed November 15, 2025. <https://www.escursionista.it/trekking-delle-torri-costiere-in-salento-vol-1-atlante-litorale-adriatico.html>

Experience Puglia Online. "Mountain Bike: Torri Costiere." *Experience Puglia Online*. Accessed November 15, 2025. <https://experience.pugliaonline.com/activities/mountain-bike-torri-costiere/>

Garware Technical Fibres. *Non-Woven Geotextile*. Accessed June 2025. <https://www.garwarefibres.com/products/environmental/non-woven-geotextile>.

Il Sentiero del Viandante. "Tappe." *Il Sentiero del Viandante*. Accessed November 15, 2025. <https://www.ilsentierodelviandante.eu/en/tappe/>

Kengo Kuma & Associates. "Nest We Grow — Memu Meadows." *Divisare*. Accessed November 10, 2025. <https://divisare.com/projects/283550-kengo-kuma-and-associates-nest-we-grow-memu-meadows>

La Grotta di Giano. *Il Promontorio di Minerva tra Storia, Mito e Multiple Identità*. Accessed May 28, 2026. <https://grottadigiano.wordpress.com/2025/07/13/il-promontorio-di-minerva-tra-storia-mito-e-multiple-identita/>.

Lecco Tourism. "Sentiero del Viandante: The Wayfarer's Path." *Lecco Tourism*. Accessed November 15, 2025. <https://leccotourism.it/en/sentiero-del-viandante-the-wayfarers-path/>

Marine Adventures. *Le Sentinelle di Pietra del Parco Marino*. Accessed May 2026. <https://www.marineadventures.org/le-sentinelle-di-pietra-del-parco-marino/>.

Massa Lubrense Turismo. *History of Massa Lubrense*. Accessed December 2025. <https://www.massalubrenseturismo.it/en/massa-lubrense/history-of-massa-lubrense/>.

Progetto Radici. "Le Torri Costiere di Puglia: Una Straordinaria Corona di Pietra a Protezione della Incantevole Costa Pugliese e dei Suoi Abitanti." *Progetto Radici*, August 3, 2021. Accessed November 15, 2025. <https://www.progetto-radici.it/2021/08/03/le-torri-costiere-di-puglia-una-straordinaria-corona-di-pietra-a-protezione-della-incantevole-costa-pugliese-e-dei-suoi-abitanti/>

Purnell, Karen. "Costa del Sol: My Epic Hike along the Málaga Seashore." *The Times, Travel Section*. Accessed November 15, 2025. <https://www.thetimes.com/travel/destinations/europe-travel/spain/costa-del-sole-my-epic-hike-along-the-malaga-seashore-b9bt3wvsp>

Québec Maritime. “*The Lighthouse Trail.*” *Québec Maritime*. Accessed November 15, 2025. <https://www.quebecmaritime.ca/en/road-trips-and-getaways/the-lighthouse-trail>

Radreisen Eurocycle. *Rund um den Gardasee*. Accessed November 24, 2025. <https://www.radreisen.at/italien/rundfahrt/rund-um-den-gardasee>.

Senda Litoral. “*Home.*” *Senda Litoral*. Accessed November 15, 2025. <https://www.sendalitoral.es/en/>

Travel Savvy TV. “*Experience Quebec’s Best Sites: The Lighthouse Trail.*” *Travel Savvy TV*. Accessed November 15, 2025. <http://travelsavvy.tv/destinations/around-the-globe/attractions/experience-quebecs-best-sites/the-lighthouse-trail/>

Terre.it. “*Il Sentiero del Viandante: Tutto Quello che C’è da Sapere.*” *Terre.it*. Accessed November 15, 2025. https://www.terre.it/cammini-percorsi/le-schede-dei-cammini/il-sentiero-del-viandante-tutto-quello-che-ce-da-sapere/?srsltid=AfmB0oqSK7LGvb54LrBwFtUDSR56bS4lS9Q8leadxXctS_E3H-cCyxWQz

Trekking Lecco. “*Sentiero Viandante: Tappa Varenna-Dervio.*” *Trekking Lecco*. Accessed November 15, 2025. <https://www.trekkinglecco.com/sentiero-viandante-tappa-varenna-dervio/>

True Log Cabins. *Log Fasteners*. Accessed June 2026. <https://truelogcabin.com/log-fasteners/>

Visit Limone sul Garda. *Cosa fare a Limone sul Garda*. Accessed November 15, 2025. <https://www.visitlimonesulgarda.com/it/cosa-fare-limone-garda.htm>

Le Strade del Vino Puglia. “*Tra le Torri Costiere.*” *Le Strade del Vino Puglia*. Accessed November 15, 2025. <https://lestradedelvinopuglia.com/tra-le-torri-costiere/>

Villa Setnia. “*Cami de Cavalls.*” *Villa Setnia*. Accessed November 15, 2025. <https://villasetnia.es/en/cami-de-cavalls/>

Wikipedia contributors. *Camí de Cavalls*. *Wikipedia*. Accessed November 15, 2025. https://en.wikipedia.org/wiki/Cam%C3%AD_de_Cavalls

IX.

Annex

Origins of the topic - ReUse Italy



Figure 98 - Board for the ReUse Italy Competition - ReUse the Watchtower

The topic of that thesis come from the participation to the ReUse Italy competition in the beginning of 2025. To work on that competition, some researches has been carried and led to the discovery of the presence of not only one watchtower, but nine within the territory of Massa Lubrense. That discovery led to the idea of combining architectural intervention and GIS analysis in order to create that work.

Time Amalgam attempts to bring back what once stood, keep what remains, and add what will be. The concept it follows is that of simplicity together with lightness, reversibility, and revival. Putting together wood and fabric, the additions are tools to strongly suggest the forms that existed at the edge of Punta Campanella. Cautious towards Torre Minerva, the project withholds an intervention inside the tower, though brings the activity up the existing. Altogether, the design invites the observer to re-imagine the setting of one of Sorrento's past coastal defense towers.

The former residence for the lighthouse keeper, is now a residence for the artists. Former machicolations of the watchtower, are now the support for the atelier; and what might have stood an auxiliary building on the northern part, re-stands as an auxiliary show room for possible additional artists. The absence of the existing lighthouse in this project, is instead suggested with the quadripod base elevating the new lighthouse at the edge of the coast. This stratified history remains visible to various extents in the site.



Figure 99 - Oblique Plan of the intervention

To preserve the traces, every addition of the project is uplifted by one meter, and put on bases of mirror, in order for the buildings to appear floating and emphasize on the remains of the site. In favor of that, the materials constituting the buildings are chosen to be light, as well as simple to set up; and disassemble. The modular wooden skeleton, is wrapped by a



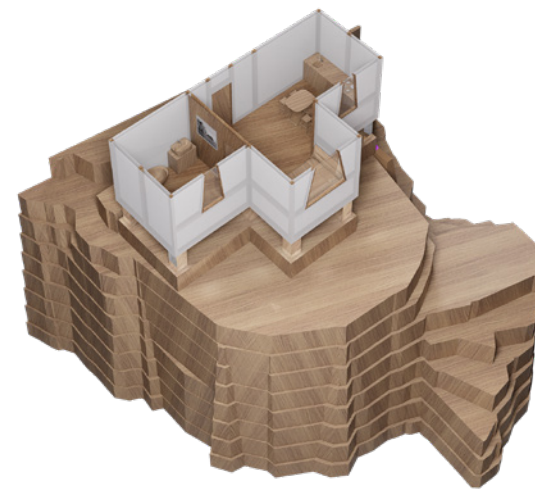
Figure 100 - Project Render

weather-resistant fabric that leaves the occupant in a semi opaque relation with the context.

Reviving the precedents, along with preserving the current, by solely connecting the existing staircase to a new one, the watchtower is re-used as a passage to the subsequent stage. By virtue of preventing alterations to the tower, this solution was adopted, since the interior space is inaccessible. This space as the atelier of the artist, takes the shape of a new form, and a new function contemporary to this site.

Figure 101 – Section

The atelier rests on a recreation of a medieval battlement echoing the tower's history. It is opened to the sea with an arched aperture, inspired by the southern facade's opening.



The closest to the shore, is the resting point of the artist, in a T-shaped space, reproducing the former building's silhouette.



The additional showroom, is paired with an additional accommodation, in order to welcome extra residents.

Figure 102 – Maquette style renders detailing the internal dispositions

