Chapter 11

Cavities and hypogeal structures of the historical part of the City of Catania

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Abstract

A factor that may contribute to significantly modify seismic action on the surface is the presence of natural and anthropic cavities or else the presence of structures within such cavities. Italian cities do frequently have cavities and hypogeal structures which can represent a further factor of geotechnical hazard for the buildings above or for those close to such cavities. The collapse of the vaults of these cavities represents a further factor of risk for the structures inside the cavity itself. Catania has many cavities and hypogeal structures; so one of the goals of this work has been that of taking a census of them By an accurate investigation, some unknown cavities have been discovered, and together with the known cavities have been geo-settled by the GIS system properly suited for Catania. In the present paper, a survey of the cavities under the central area of Catania city and the implementation of a GIS database of detected cavities have been implemented. In the city of Catania the cavities represent a high risk for foundation stability of some buildings, so the following cavities have been studied in detail: Casa di Sant’Agata, cavity Piazza A. Di Benedetto, cavities via Lavandaie, Pozzo Gammazita, cavity Piazza Currò, Cripta of S. Agostino Church.
1 Introduction

This paper represents the continuation of a previous work (Bonaccorso and Lo Giudice [1]), by which a census of some cavities and hypogeal structures in the urban centre of Catania has been made. The survey was made by the Centro Speleologico Etneo group. The investigated area is localized in the central part of the city, around the Piazza Duomo square site. From the view of the geological map of the urban area of Catania (Monaco et al. [2]), shown in Fig. 1, it is possible to see that almost all the investigated sites fall in the anthropic formation outcrop area. The exposure of the sites (see Fig. 2) follows the numbering listed in the implemented ArcView GIS database of detected cavities (Grasso and Maugeri [3]).

2 The survey of some cavities and hypogeal structures

2.1 Location 1 – Achilles’ Thermal Baths

They are placed under the square in front of the parvis of the Cathedral (location 1 in Figs. 2 and 3) and represent the most important hypogeum in the area of Piazza Duomo. It has not been possible to survey them because neither the Monuments and Fine Arts Office nor the Town Council, which is working there at the moment, has granted anyone permission to make an assessment. A major problem has arisen regarding several vaults of the Cathedral, because even if they are widely described (Rasà Napoli [4]; Reale [5]), the Curia did not allow us to enter, maintaining that no admittance to these hypogea is possible any longer.

Figure 1: Extract of the geological map of the urban area of Catania (after Monaco et al. [2]).
Figure 2: View of the investigated sites with the presence of cavities.

Figure 3: Aerophotogrammetry extract of the Piazza Duomo area.
2.2 Location 15 - S. Agata’s house

The cavity (location 15 in Fig. 4) is beneath the former municipal carpenter’s shop inside St. Placido’s Friary and near the intersection between via Landolina and via Museo Biscari (Fig. 5). Perhaps it already existed before the building had been built (a note dating back to 1700 describes it as a watering place provided with two springs). One may enter it through a flight of stairs made of bricks. It consists of a small, muddy-bottomed room filled with water which comes from a cleft on the northern wall. This cleft leads to a short and narrow tunnel dug in the lava rock. On the western wall there is a niche which rises above the surface of the water (see Fig. 6). Since there are wax traces on its mildly windowsill the place is likely to have been used as a niche. The eastern wall is both occupied by the final part of the entrance stairway and a walled-up niche. On the bricks of the barrel vault there is a rather narrow cleft, rectangular in shape and now closed, which once was in communication with the rooms above. It was probably used to draw water. The cavity does not show obvious signs of instability. The floor of the room surveyed is slightly higher than sea level (measurements referring to the aerophotogrammetric altitudes) and has a surface of about 9 m² and the vault thickness, in correspondence with the keystone, is about 2 m.

Figure 4: Location of S. Agata’s house cavity.
Figure 5: The St. Placido’s Friary building near the intersection between via Landolina and via Museo Biscari.

Figure 6: Transversal section of the S. Agata’s house cavity.
2.3 Location 16 - The tunnel downstream from the fountain of the river Amenano

This tunnel both provides the river with water (location 16 in Fig. 7) and represents the continuation of the tunnel upstream from the fountain itself. The survey of the tunnel upstream was shown by Bonaccurso and Lo Giudice [1]. The section downstream starts from the fountain of the river Amenano, flows south-southeastwards continuing beneath Carlo V’s walls and Villa Pacini, then bends again eastwards and finally flows into the sea at the port. The fountain is at the same level as Piazza Duomo (see Fig. 8). Under the monument the bed of the tunnel shows a great change in its slope which takes it underneath the level of Piazza Di Benedetto. The level of the latter is some metres lower than Piazza Duomo’s. The bed of the tunnel moves forward downstream from the bearing arch, which can be seen in Fig. 9 and does not show great changes in its slope. On the other hand, the vault changes in both its height and size along its route as can be seen in Fig. 10. After a section marked by a relatively low vault, also due to the presence of sand and silt which made the bottom higher, the tunnel contains other ducts under the pavement on the eastern side of Piazza Di Benedetto (that is, the pavement facing the municipal police station placed over Carlo V’s walls). In this merging site the vault is made up of a reinforced-concrete floor and a beam (see Fig. 11). The extensive damage shown in Fig. 11
may be the result of the upheaval of the bottom of the tunnel caused by debris, generating a penstock working which increases the erosion of the vault. However, the obstacle represented by the beam probably provokes whirlpools which continue on digging into the reinforced-concrete layer. Downstream from this area the tunnel goes under Carlo V’s walls which date back to 1500. Here, the vault is a barrel one again. Collapses have occurred in many parts (see Fig. 12) but no reparation restored the original shape. Beyond this section the vault becomes lower and the tunnel is completely flooded. After crossing Via Dusmet the river flows through Villa Pacini where a manhole reveals the presence of waste; finally it reaches the sea in the area of the port.

Figure 8: The fountain at the same level of Piazza Duomo, and the entrance of the tunnel.

It is worth noting that besides the erosion phenomena described above, this tunnel shows a process of filling with earth caused by sand and waste and furthered by the fact that downstream the slope of the longitudinal section is hardly enough to make waste-free water flow because Piazza Di Benedetto is at a level not much higher than the sea level. The slope and the filling process with earth are similar to those seen in the tunnel placed in the area of the port (number 47 of the list in Appendix 1).
Figure 9: View of the bearing arch of the River Amenano tunnel.

Figure 10: View of the vault changes in both height and size along its route.
Figure 11: View of the reinforced-concrete floor and of the beam.

Figure 12: View of the collapses that have occurred in many parts of the River Amenano tunnel cavity.
2.4 Location 17 – The hypogeum situated in via Lavandaie

The entrance is directly situated on the street, closed by a two-shuttered sheet-steel door. There are about ten stone steps going underwater. The cavity explored (location 17 in Fig. 13) consists of a masonry room with cross vaults held by walls of bricks and a central pillar plunged into the water (Fig. 14). The hypogeum is made up of a series of flooded rooms reminding one of the ancient Roman and Arabic cisterns (see Fig. 15). These tunnels represent the base of a four-storeyed building. The first room (western entrance) is connected with others, eastwards and southwards, where a thicker layer of mud on the bottom makes walking through it extremely difficult. Almost surely the tunnels continue beyond the final walls which were built later and were defined in planimetry as stone walls. Since the water level varies fast in cases of heavy rains this shows a link with a bigger net of underground channels. It has not been possible to understand where the fresh water is from but historic recordings and logic reasoning indicate a western origin. There is no evidence of remarkable erosive phenomena on the walls of the hypogeum.

Figure 13: Location of the Via Lavandaie Hypogeum.
2.5 Location 23 – The hypogaeum situated in via Roccaforte

The entrance to this hypogaeum (location 23 in Fig. 16), situated in the hall of a building on the west of the Town Council and on the south of the University
premises, is closed by a sheet-steel trap door. The only thing we could do was a preliminary survey. No permission for more accurate surveys was granted. They are thought to be underground rooms discovered during the excavations of 1872, as reported by Holm [6]. The hypogeum consists of a highly unstable room under which many channels flow. There is a support pillar at the centre of the room. The floor has collapsed in many parts of the underlying tunnel (see Fig. 17). Some reparation has been done through a layer of reinforced concrete to support the new floor of the shop above.

![Figure 16. Location of the via Roccaforte hypogeum.](image)

### 2.6 Location 25 – The hypogeum situated in via Alessi

The people who live in the area have repeatedly reported that there are underground many-layered rooms under the building situated at 24, via Alessi (point 25 in Fig. 18) by the stairway. As a consequence of many processes of renovation the several entrances have been closed thus it is not possible to enter this hypogeum.
Figure 17. View of the floor collapsed in many parts of the tunnel underlying the via Roccaforte hypogeum.

Figure 18: Aerophotogrammetry extract of the area.
2.7 Location 48 – Gammazita Well

The cavity opens inside a private courtyard and its entrance is in a side square in Via S. Calogero (location 48 in Fig. 19). It consists of a big and deep chasm due to a partial cover of the lava flow of 1669. If compared to the level of the courtyard, the bottom of the chasm is about 11 m in depth and covers an area of 19 m². Such depth can be attained through a stairway consisting of five flights of brick steps (see Fig. 20). The bottom is covered with an everlasting thin layer of water, which was called “the fish-pond” because of some goldfish in it. Traces of the ancient flooring made of large and unperforated bricks are still standing today. The bottom of the well is marked on the north-west side by a wide bank made of bricks which has a brick tile flooring. It is dominated by a high wall made of large squared stones which are likely to have been a section of the ancient city walls. The lava flow set against this wall creates stone arches on which the buildings surrounding the chasm are built. The lava flow borders on the well on the north and the south and at the same time limits the wall; the bricks of the stairway are on the south-east and reach a footpath paved with flagstones which is partially occupied by a wash-house. This situation is shown in the planimetry of Fig. 21a. On the north-east of the bottom of the well there is a little cavity full of water, inside the lava flow and less deep than a metre, which represents the source, that is the utmost point reached by water (see Fig. 21b). The surface of the cavity of the well is 4 m² approximately. Only by making use of the altitudes of the aerophotogrammetric survey is it possible to argue that the bottom of the well is about 1 m above the sea level. Above the well there is a highly jutting five-storey building. One of its walls hangs in mid-air and leans on an unstable iron beam. There is another building on the lava rocks above the wall.

Figure 19: Aerophotogrammetry extract of the area.
Figure 20: View of the well from the private courtyard.

Figure 21: Gammazita Well. a) Planimetry of the investigated area; b) view of the utmost point of the well reached by water.
This situation, shown in the planimetry in Fig. 22a and in the vertical section of Fig. 22b, may be seen in Figs. 23 and 24.

Figure 23: View of the highly jutting five-storey building above the well.

Figure 24: View of the walls hanging in mid-air and leaning on an unstable iron beam.
2.8 Location 76 – The tunnel situated in Piazza Currò

This hypogeum may be explored through the dungeon of the Youth Hostel situated 40 m eastwards from the ancient Terme dell’Indirizzo (location 76 in Fig. 25). It is possible to enter this dungeon from a trap door on the sidewalk facing the Hostel. As shown in Fig. 25, the cavity develops north-eastwardly beneath the square and is parallel to the town wall of the trench leading to the railway tunnel. As both the planimetry and the section in Fig. 26 show, the hypogeum consists of two levels linked by a stairway made of bricks and stone squared ashlers. The upper level may also be reached via the dungeon by a stairway. The upper level of the hypogeum consists of an artificial cavity dug in the lava rocks so as to reach the lower level to draw water. Perhaps the lower level is an old channel buried by the lava flow of 1669, and if we consider the direction of the flow it is possible that it has been a main water-providing channel of Terme dell’Indirizzo. It seems likely that this channel might be a section of one of the thirty-six channels which flowed by Porta dei Canali as has been quoted by several historians. A second stairway allows entrance to a lower level consisting of a tunnel of about 30 m in length where water flows. The water which comes from the north-east channel disappears into a narrow hole among the lava rocks which are on the right of the stairway south-east oriented.
tunnel is straight and has a side on the north and the ceiling dug in the lava rocks. There are widenings closed by stone walls, which are attempts at repairing probable collapses. Both the other side and the level of flowing of water are made of bricks which are not permeable thanks to a larry layer. The tunnel finishes a few metres after a narrow passage, which compels one to crawl on one’s side plunged into the water. The final section (barrel-vaulted bricks), slightly uphill and dry, is closed by a stone wall. On the south-east, at approximately 1 m above the surface of the water, there is a wide niche uphill where many crots of enamelled terracotta can be found among the pebbles. The water which flows in the channel is apparently clear and odourless. It springs from beneath the lava rocks and is 20 cm high above the floor. The cavity is not unstable and its vault is 6 m under the road surface on the average except for its final section which is 1 m less thick.

![Figure 26: The planimetry and a section of the hypogeum.](image)

3 Conclusions

As it has been reported by Bonaccorso and Lo Giudice [1], the detailed survey of the above mentioned cavities confirmed our worst fears on the dangerousness, vulnerability and risk related to the presence of cavities and hypogeal structures in the city of Catania. Our attention has focused on the problems caused by the incorrect management and non-maintenance of water-pipes such as the ones in the tunnel downstream from the Fontana dell’Amenano, which continue to block, obstructing the tunnel and eroding the vault. These problems have obviously not been solved out by the different attempts to alleviate the situation.
which never aimed at continual remedial work for the old structures. Particularly in the case of the Gammazita Well a very high rate of danger has been found. Here the precariousness is aggravated by the instability of the hypogeum as well as the jutting five-storey building on the surface.

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Appendix I: Geo-settling of detected cavities and hypogeal structures of the historical part of the city of Catania

The known cavities have been geo-settled by the GIS system properly suited for Catania (Grasso and Maugeri [3]). As an example, Figs. 27 and 28 show the location and position in the GIS system of some cavities of the historic centre of Catania. Some cavities have been inspected in detail and a topographical survey was made and geo-settled, particularly for the case when the cavities were located under existing relevant buildings. The complete GIS database of geo-settled cavities is reported in the following.

Duomo di S. Agata
1 – Under the churchyard and the sidewalk which is in front of it there are some rooms of the Terme Achillee and an ancient tunnel which crosses them both in the open air and proceeds under the Cathedral (Holm [6]). When the river is in flood its water generally inundates the Terme.
2 – In the underground there are two mortuary rooms where bodies were drained of their liquids. These rooms are placed near the mortuary room containing Cardinale Nava and Cardinale Dusmet’s bodies (Reale [5]).
3 – A well provided with a winding staircase whose entrance is placed near the third sub-arch on the right and very close to S. Agata’s aisle (Reale [5]).
4 – A wide room under the Cappella della Madonna (Reale [5]).
5 – A wide mortuary room owned by the Canonicals and situated at the foot of the monument dedicated to Cardinale Dusmet (Reale [5]).
6 – A deep site crossed by the channel of a waterworks made of lava rocks. It is situated in the area which is beneath the rostrum of the Organ (Reale [5]).
7 – A deep space in front of the altar dedicated to St. George (Reale [5]).
8 – A deep ditch along the aisle dedicated to the Holy Sacrament (Reale [5]).

The former Seminary of the Clerics
Situated at 27, via Dusmet, it was built on the walls and is linked to the Cathedral on the south and the Archbishop’s Palace. It is in communication with the Clerics’ Palace (main building of the former seminary) by the covered passageway of Porta Uzeda. Both this building and the Clerics’ Palace were repaired after the end of World War II.
9 – A wide room was discovered while it was being reconstructed. It was crowded by many arch pillars which bore the floor of the old kitchen (Reale [5]).

10 – Underground tunnel deriving from the Terme Achillee (beneath the churchyard of the Cathedral). It continues towards via Dusmet then it links up with other channels and finally reaches the sea (explored and preliminary survey already done).

The Clerics’ Palace (Piazza Duomo)
Central building of the former Seminary now owned by the Municipality. It is situated on the right of Piazza Duomo.

11 – Underground rooms intersected by corridors under the Walls and discovered in 1856 when some openings were made in the walls as a consequence of some restoration works (Holm [6]).

Figure 27: View of the cavities and hypogeal structures beneath the urban area of Catania.

Palazzo Sammartino Pardo at the beginning of Via Garibaldi near Piazza Duomo
12 – Underground areas with some water flowing. They were noticed under some workshops which were being paved again (as has been reported by the local dwellers).

Piazza Duomo
13 – Underground tunnel running from Via Marletta whose water inundates the Terme Achillee when the river is in flood (explored; the planimetric survey is available).
Via Vittorio Emanuele
14 – A Roman hypogeum discovered during the digging of the sewer in 1916 (Orsi [7]).

Via Museo Biscari at the corner with via Landolina
15 – An underground space partially flooded. It is situated under the friary and is traditionally known as “S. Agata’s house” (information checked).

Piazza A. Di Benedetto (the fish market place on the west of the Clerics’ Palace)
16 – An underground tunnel whose water comes from the Fontana dell’Amenano and flows towards via Dusmet (partially explored).

Via Lavandaie, 10 – 14 (on the south of Villa Pacini)
17 – Near the carpenter’s shop there is the entrance to a flooded dungeon which was used to breed eels. The water is likely to come from the Castello Ursino area through an underground tunnel. There could be a source in the nearby port (local dwellers and fishermen have repeatedly reported about the presence of eels in the port).

St. Antonio’s church and the adjacent buildings (Piazza S. Antonio in via Garibaldi)
18 – A remarkable squared room and other remnants under the church (Holm [6]).

St. Augustine’s friary (via V. Emanuele at the corner with via S. Agostino)
19 – It was built on ancient vaults and porticos (Ferrara [8]).
Chiesa di SS. Trinità (via V. Emanuele at the corner with via Quartaro)
20 – A big room, maybe a cistern, within the foundations (Sciuto Patti [9]).

Cortile S. Pantaleone (via Orfanelli, a side street of via SS. Trinità)
21 – Many rooms (at a depth of 7 m) on the south have been known for a long time. There is a long corridor on the eastern side and a portico at a lesser depth. Vitruvius (Ferrara [8]) stated that the Forum, the Mint, the Barns and the Armouries were in this area. Because of the great quantity of water in this cavity which often sprang from here in the past, Bolano thought in 1588 that there should be some thermal baths (Holm [6]).

Chiesa di S. Martino (via V. Emanuele at the corner with via S. Martino)
22 – There are some vaults under the western side of the church (Ferrara [8]).

Via Roccaforte (behind the Town Hall and the University)
23 – Many underground corridors were discovered as a consequence of excavations made in 1872 (Holm [6]).

Casa Ursino Recupero
24 – In the underground there are remnants of a building made up of rooms and corridors (Holm [6]).

Via Alessi
25 – Multi-layered underground rooms under the building at number 24 by the stairway (from continuous reports by the local dwellers).

Piazza Asmundo
26 – In the 1970s a lorry parked there sank.

Via S. Francesco
27 – In 1995 a section of the street subsided because of the collapse of the vault of an old waterworks.

Via S. Giuseppe al Duomo (at the corner with via Roccaforte, on the west of the University)
28 – There is a space under the building where water flows. Some springs have been identified nearby (there is a planimetric survey of the Municipal Sewage Office).

University premises
29 – According to Carrera [10], long and strong walls were discovered while the foundations of the old hospital (the present University premises) were being laid.
30 – In via Bicocca, at the former number 02, many underground rooms where the Gaglianos once lived were noticed. One of these rooms was used as a toilet and was flowed through by “clear and fresh water” (Ferrara [8]; Holm [6]).
31 – Many underground rooms were noticed in the 1980s during repairs to a depression in a courtyard.
32 – A section of Piazza Università near the newsagent’s on the south sank in 1996.
Via A. Di San Giuliano (from east to west)
33 – Under the Asmundo building (Quattro Canti) many remnants of thermal baths were found (Orsi [11]).
34 – Between the Buglio residence and the Monastero di S. Giuliano, at the corner with Via Crociferi (Ferrara [8]). Ferrara remarks that he visited many times “huge pozzuolana pits”, that is red sand and earth, which the dwellers considered as catacombs.

Chiesa di S. Giuliano (36, via Crociferi)
35 – Huge underground factories, vaulted passages behind the cloister of Minor Franciscans (Carrera [10]).

Chiesa dei Minoritelli (via G Clementi, in front of S. Marta Hospital)
The church was founded at the end of 1700 on ancient thermal baths by the minor cleric Bartolomeo Asmondo (Rasà Napoli [4]).
36 – An underground corridor closed by a landslide. A plaque placed at the entrance states that this was a Roman prison (Andronico [12]).

Reclusorio delle Verginelle (in Piazza Dante at the corner with via Teatro Greco)
37 – Under the northern-southern corner of the block (via Orfane - via C. Nutrizione) there are some rooms, one being octagonal; a south-oriented channel starts from the southern most of these rooms (Holm [6]).

Via V. Emanuele (past Piazza S. Francesco d'Assisi)
38 – There is a room built in 1818 under the pavement which contains the base of the so-called “Marcello’s Arc” (Holm [6]).

Villa Cerami (at the end of via Crociferi)
39 – In 1972 a chasm opened in the garden. Some material dropped into the underlying Amphitheatre.
40 – In 1997 some parts of the floor of the former stables subsided. Some material dropped into the underlying Amphitheatre.
(Both cases were surveyed by the Monuments and Fine Arts Office, the Civil Engineers and the Municipal Technical Office).

Chiesa S. Agata la Vetere
41 – There is a wide crypt under the church (Andronico [12]).

Chiesa di S. Agata al Carcere (in the homonymous square in via Cappuccini)
42 – There are parallel rooms under the church (information checked).

Palazzo della Borsa
43 – There are several rooms and corridors partially flooded (information checked).

Chiesa di S. Euplio (via S. Euplio at the corner with Piazza Stesicoro)
44 – There is an underground room with quadrangular niches. This space was used as a tomb (Holm [6]).
Piazza Stesicoro
45 – In the underground there are some rooms and the vaulted corridors of the atriums of the Roman Amphitheatre (Holm [6]).

Chiesa di S. Gaetano alle Grotte (Piazza Carlo Alberto)
46 – A worship place 6 m under the street level (notice checked) and a flooded cistern (notice checked).

The Port area
47 – Port - former Foreign Trade Office: a tunnel through which the storm sewage waters previously flowed (a preliminary survey has already been done).

Via S. Calogero
48 – Gammazita Well placed in a courtyard (notice checked).

Chiesa di SS. Trinità (in via V. Emanuele at the corner with via Quartarone)
49 – A well placed in the garden of the Friary. Its depth is about 30 m.

Convento dei Crociferi (in via Crociferi at the corner with A. Di Sangiuliano)
50 – In 1874 the engineer Pietro Feltrami ordered that some work should be done to “the river Amenano” in the courtyard of the Friary (Catania Civil Court; survey number 71 in 1874).

Via Pozzo Rotondo
51 – Volcanic sandpit called “Cava della Botte dell’Acqua” with an entrance situated within a private courtyard. There is a secondary entrance at 9, via Danieli. There is an air-raid shelter inside it (explored and surveyed).

Convento dei Benedettini (Piazza Dante)
52 – A well placed in the basement under the Vaccarini lounge. It is about 40 m deep and 2 m wide on the average and crossed by a channel at about 20 m (notice checked).
53 – Wide multi-layered underground rooms (notice checked).
54 – Three wells, 20 m deep on average, placed in the courtyard facing the Benedectines’ Friary in Piazza Dante (information checked).

Chiesa di S. Nicolò l’Arena
55 – A crypt underlying the area of the High Altar consisting of a wide lounge connected with other rooms (notice checked).

Via Santa Barbara
56 – A three-lighted window Basilica. A wide room under the street discovered during the works for the sewage (there is a perfunctory planimetry).
57 – A room under a shop at the corner with via V. Emanuele (notice checked).

Via Angelo Custode
58 – Casa Zuccarello is the block placed between via Angeli Custodi and via Bufalo. A very deep ditch containing the remnants of the Bastione di San Giorgio are on the east (Pennisi [13]).
Castello Ursino
59 – Within the excavation site (1987) run by the Monuments and Fine Arts Office on the foot of the southwestern Tower a tunnel has been found (not explored). It is oriented along the main axis of the ramparts.

Via Consolato della Seta between via S. Chiara and via S. Maria dell’Aiuto
60 – A 6 m deep fountain (Sciuto Patti [9]; Holm [6]).

Chiesa di SS. Cosimo e Damiano (Piazza Machiavelli)
61 – Underground rooms and a well (local dwellers have repeatedly reported this fact).

Via Aleardo Aleardi
62 – A gravel quarry called “red earth” in via Aleardo Aleardi. It is inside a garden and its entrance is walled up.

Via Grotta Magna
63 – There is a wide and deep well in the basement of a building at 13, via Grotta Magna (notice checked and place surveyed).

The new Capuchin church and Friary (via Plebiscito at the corner with via Grotta Magna)
64 – Underground rooms with an entrance placed in the cellar of the friary. These rooms end in a quarry under the lava flow of 1669 (notice checked and place surveyed).
65 – A well placed in the garden of the Friary. It is about 30 m deep.

Via Madonna della Catena
66 – A well situated in the courtyard of the former liquorice factory at 61, via Madonna della Catena. The well has a round section and it is 40 m deep on average (notice checked).

Via Acquedotto Greco
67 – An air-raid shelter with a staircase entrance placed in the courtyard at 60, via Acquedotto Greco (notice checked).
68 – An air-raid shelter with a staircase entrance placed in the courtyard at 71, via Acquedotto Greco (notice checked).

Via Grassi
69 – A gravel quarry called “red earth” with an entrance placed in the courtyard at 52, via Grassi (notice checked).

Chiesa Sacro Cuore al Fortino in Piazza Palestro
70 – Crypt of the executed people: a wide room (notice checked).

Via Mongibello
71 – A gravel quarry called “red earth” with an entrance in the area called Sciare Curia (notice checked).

Via Martelli Castaldi Sabato
72 – A gravel quarry called “red earth” nicknamed “Grotta Lucenti” with an entrance in the same area of the future Office District of Cibali (notice checked).
Via A. Merlino (Cibali ward)
73 – A tunnel discovered in the 1950s during the making of the street. It led to many underground rooms (probably underlying the former refugee camp, today AIAS). These rooms were filled with scraps and war weapons. The remains of a German soldier were found.

Via Valdisavoia
74 – An air-raid shelter with an entrance placed behind the Agricultural Faculty (local dwellers’ report).

Via Due Obelischi
75 – A pumice quarry with an entrance in via Condorelli (local dwellers’ report).

Piazza Currò
76 – An artificial channel where a river flows. The entrance is located in a home. (notice checked and place surveyed).

References


