

**BENEFICIARY**  
**CLUJ COUNTY TERRITORIAL ADMINISTRATIVE UNIT,**  
**VIA CLUJ COUNTY COUNCIL**

**TECHNICAL EVALUATION**  
**REPORT**

Quality technical evaluation report services  
for constructions built up pursuant to building permit  
no. 2242/21.12.2007, issued by  
the Cluj-Napoca Municipality Mayor,  
at 6 B.P. Haşdeu Str. Cluj-Napoca municipality, Cluj county

**DRAWN UP BY**  
**PROF. DR. ENG. AUGUSTIN POPA**

## VALUATION REPORT SHEET

**DESIGNATION:**

Quality technical valuation report services for constructions built up pursuant to building permit no. 2242/21.12.2007, issued by the Cluj-Napoca Municipality Mayor, at 6 B.P. Haşdeu Str. Cluj-Napoca municipality, Cluj county

**SITE:**

6 B.P. Haşdeu Str. Cluj-Napoca municipality, Cluj county

**BENEFICIARY:**

CLUJ COUNTY TERRITORIAL ADMINISTRATIVE UNIT,  
VIA CLUJ COUNTY COUNCIL

**TECHNICAL EXPERT Af** (Quality Requirement in Construction “Af”):  
PROF. DR. ENG. AUGUSTIN POPA

**DATE:**

08.10 2017

**SIGNATURE LIST**

PROF. DR. ENG. AUGUSTIN POPA \_\_\_\_\_

DR. ENG. VASILE FARCAS \_\_\_\_\_

## TECHNICAL VALUATION REPORT

### 1. GENERAL DATA:

- **SUBJECT OF THE VALUATION REPORT:** Quality technical valuation report services for constructions built up pursuant to building permit no. 2242/21.12.2007, issued by the Cluj-Napoca Municipality Mayor.
- **BENEFICIARY:** CLUJ COUNTY TERRITORIAL ADMINISTRATIVE UNIT, VIA CLUJ COUNTY COUNCIL
- **SITE:** 6 B.P. Haşdeu Str. Cluj-Napoca municipality, Cluj county

The present technical valuation report was drawn up at the beneficiary's request and has the following subject: to ascertain the technical state of the built-up constructions, located at 6 B.P. Haşdeu Str. Cluj-Napoca municipality, Cluj county, in order to determine their capacity of complying with the provisions of the law.

The general designer was S.C. ARHIMAR S.R.L., whereas the specialised designer on infrastructure matters was S.C. PETER BRETT ASSOCIATES INTERNATIONAL ENGINEERING S.R.L.

The site in question belongs to the built-up area of Cluj-Napoca municipality and is located, according to Fig. 1, at the intersection of Victor Babes, Alea Studentilor and Bogdan Petriceicu Haşdeu streets.



**Fig. 1** Property layout plan

## 2. GEOMORPHOLOGICAL AND GEOTECHNICAL CONSIDERATIONS

The site is located in Cluj-Napoca Municipality, at 6 B.P. Haşdeu Str. Cluj-Napoca municipality, Cluj county.

The site is located south of the central area of Cluj-Napoca municipality, in the area of Clinicilor str. and hospitals. From a geomorphological standpoint, the land displays a prominent slope. This slope connects the 3<sup>rd</sup> and the 4<sup>th</sup> terraces of Someş river (Clinicilor str. area). For the time being, no land instability phenomena have been recorded.

From a geological standpoint, the area features Sarmatian age soils, represented by sands, clays, freestones and marl clays. The sandy layers display concretions with diameters from a few centimetres to 1.50 – 2.00 m.

The frost line is 0.80 - 0.90 m, according to STAS (Romanian standard) 6054/77 (Fig. 2). From a seismicity standpoint, it is a seismic hazard level 6 area (as per SR 11100/93; Fig. 3), for which  $a_g=0.08g$  (conf. Fig.4 - P100/2006) and  $T_c=0.7s$  (according to Fig.5 - P100/2006). From a climatic environment standpoint, the site enjoys a pleasant moderate continental climate, influenced by the vicinity of Apuseni Mountains, whereas autumn and winter are under western Atlantic influences, as well. The passage from winter to summer usually takes place in late April, whereas the passage from autumn to winter in November. Summers are warm and blizzards are generally absent in winter. The annual average air temperature is approx. 8.2 °C, whereas rainfall amounts fall between 600 and 700 mm (663 mm) (according to Fig. 6).

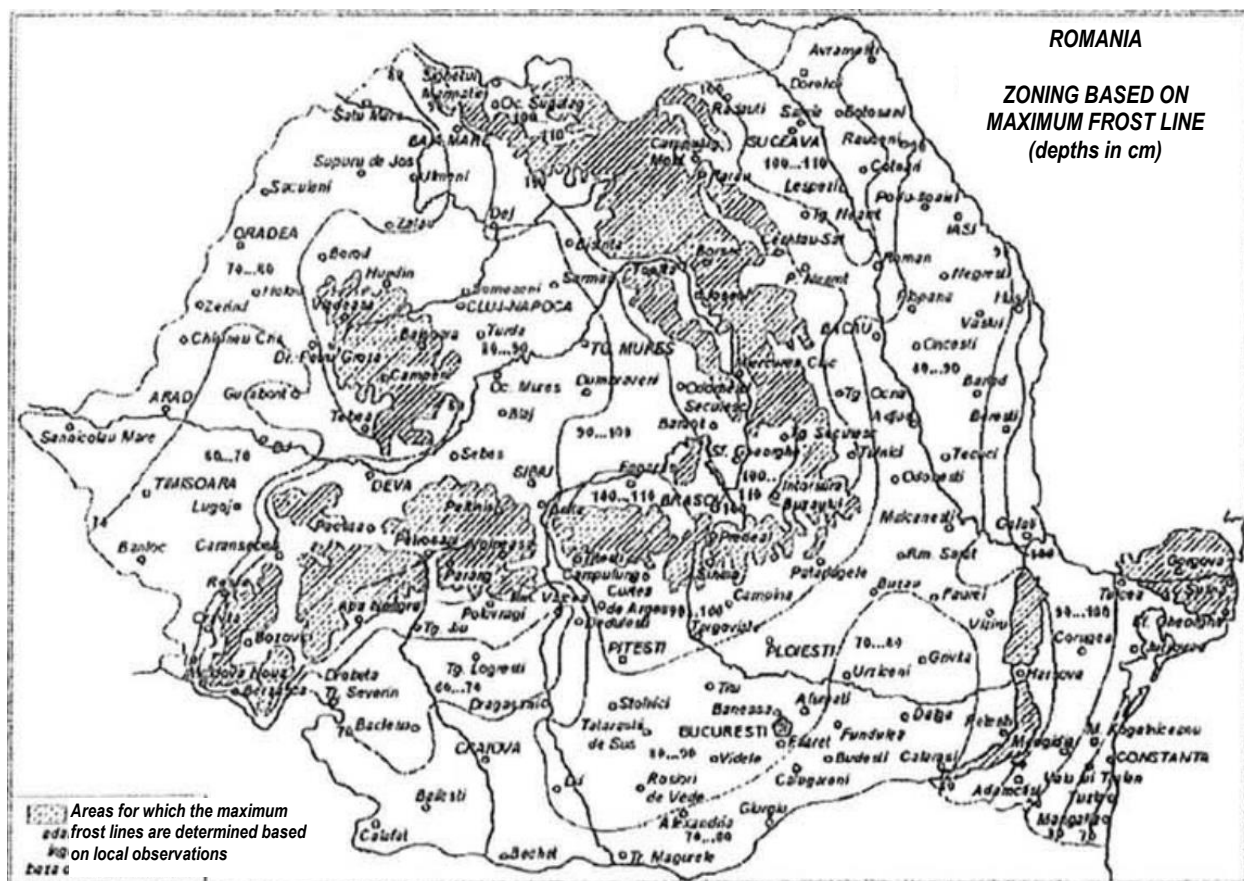
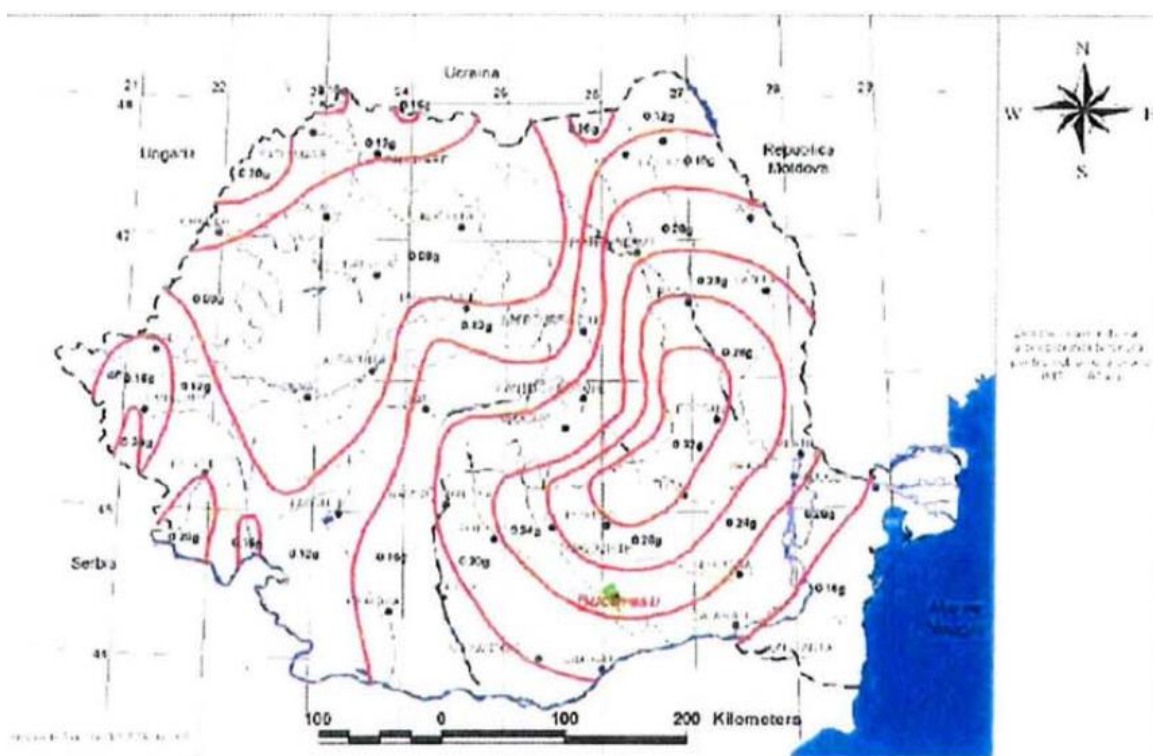
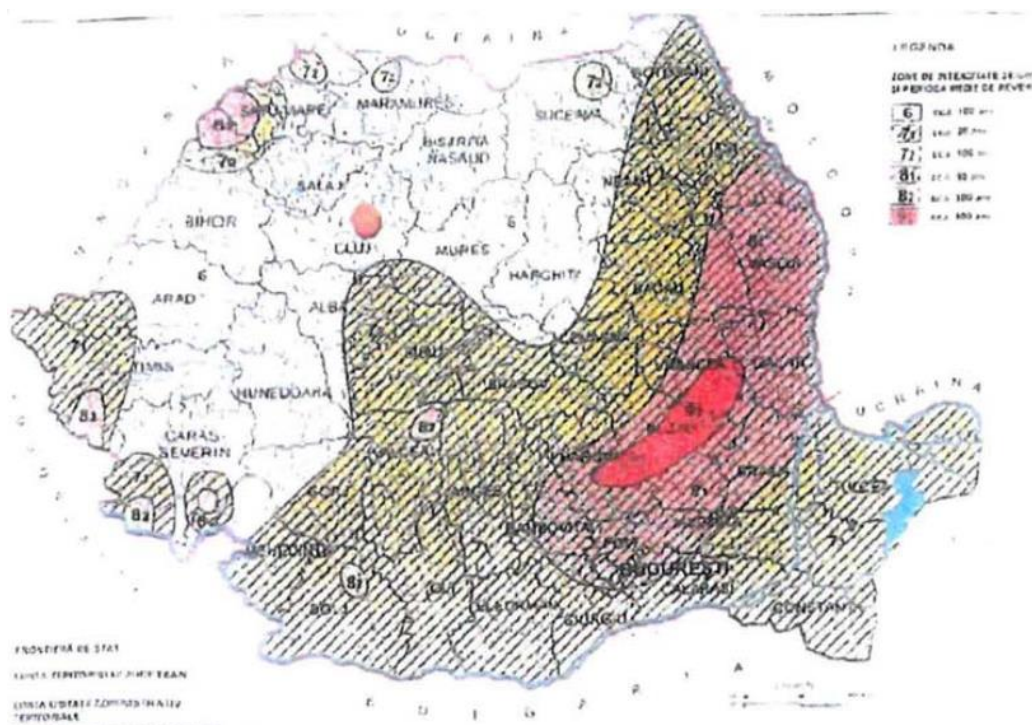
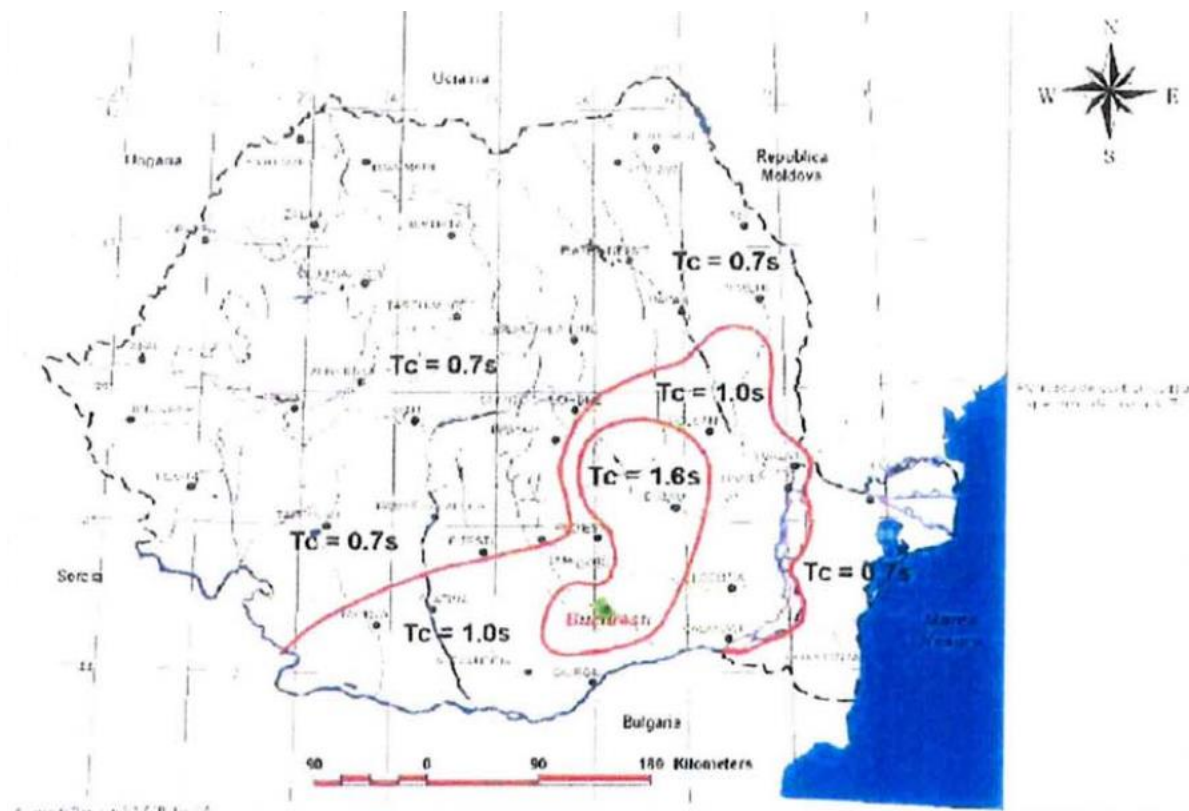


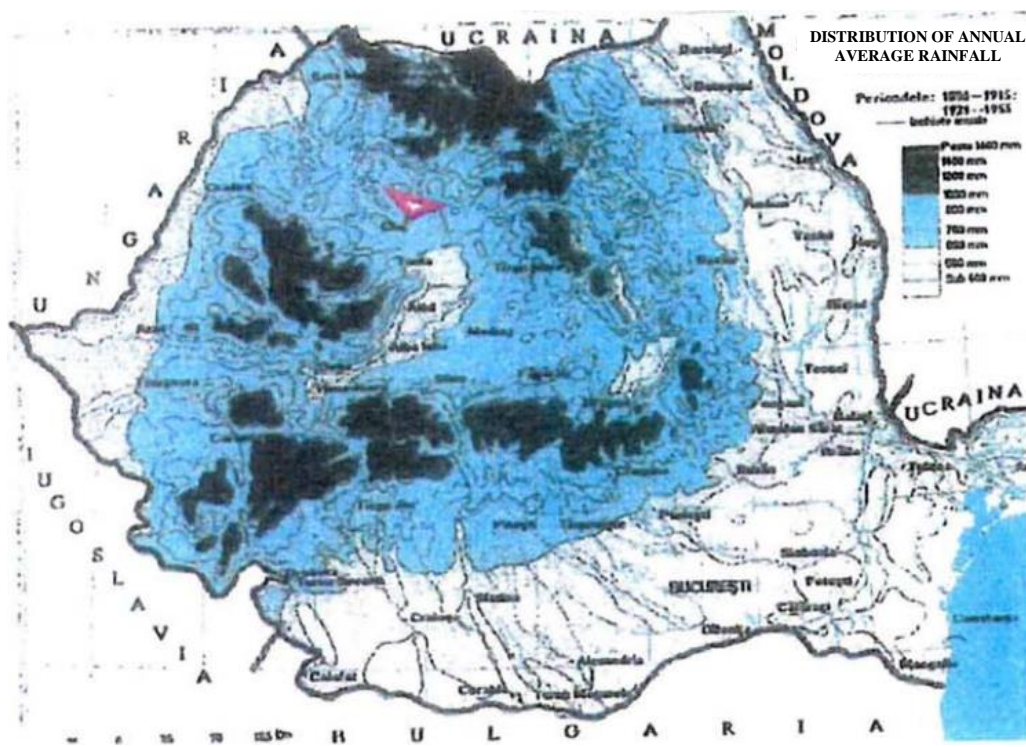
Fig. 2 Romania – Zoning based on the maximum frost line (depths in cm)







**Fig. 5** Zoning of Romania's territory in terms of corner seismic zone (corner period).



**Fig. 6** Distribution of annual average rainfall (Romania)

### 3. DESIGNED SOLUTION

The documentation made available by the beneficiary is represented by the project in the DBP (draft building permit) phase. Envisaged as part of this phase was the construction of a Multipurpose Centre with an underground parking lot, commercial areas, medical areas and office spaces, complemented by administrative outbuildings required for adequate operation. At ground level, the building will have a footprint area of 4143 sq m and a height classification 2B(basement) + 2SB(semi-basement)(-2D at street level) + GF(ground floor) + Mez(mezzanine) + 3S(storey)

In order to conduct the geotechnical investigation, 3 geotechnical drillings and 3 dynamic probing super heavy penetrations were performed. The ground surface features a top soil followed by a layer of dense yellow/grey sandy clayey silt (2). The following detected layer was that of loose yellow coarse and medium sand (3), on top of a layer of medium-settlement yellow/grey coarse and medium sand (4). The following detected layer was that of settled medium and fine sand with yellow shingle (5), followed by a layer of dense grey/yellow silty clay with small shingle(6). The final detected layer was that of hard grey marl clay (7). All the drillings intercepted concretions within the sand layers.

The underground water level was intercepted at depths between -4.00 m and -10.00 m, the hydrostatic level becoming stabilised at depths between -4.00 m and -4.50 m. The underground water displays, in relation to concretes, very low carbon aggressiveness and low sulphate aggressiveness (as per the aggressiveness assessment report).

According to DBP-phase project no. 496/2007, drawn up by S.C. ARHIMAR S.R.L. and \$ DBP-phase project no. 711/2007, drawn up by S.C. PETER BRETT ASSOCIATES INTERNATIONAL ENGINEERING S.R.L., the foundation solution adopted was with peripherally drilled secant piles, with a diameter of  $\Phi 600$ , placed in an alternating sequence over a 22-m length, in order to create an airtight enclosure. The piles were embedded in the hard grey marl clay layer (7) at the -39.50-m depth. Additionally, the works included piles with diameters of 1.00 - 1.50 m, 0.80x2.50m – 0.80x2.80m strips 28-30-32m in length and, at the -16.50-m depth, a reinforced concrete main foundation plate 0.80-m thick. The grade of the concrete employed to build the piles and the foundation plate is C30/37.

The structure relied on a system of reinforced concrete piles with slab floor. For stiffening against horizontal forces, the design used staircases, elevator shafts and garbage chutes to be made of reinforced concrete partition walls.

#### 4. COMPLETED WORKS

Following construction site inspections, it was ascertained that the project had not been executed as per the drawing (R01 – the DBP phase). The beneficiary did not provide the technical design.

The present valuation report included a mapping (drawing I) that comprises the works carried out. The geometry of the building and the extensions are those in the initial architecture project.

The works carried out are as follows:

- The peripheral reinforcing used slurry walls, cast along segments with lengths of 3.00 m - 5.20 m and 60-cm wide. The foundation depth of the slurry walls is -39.50 m, being embedded in the hard grey marl clay layer (7). The layout of the slurry walls is visible in drawing I.
- Strips, with a foundation level of -35.20 m, were executed and embedded in the hard grey marl clay layer. The strips were cast up to a depth of -17.00 m; rectangular S1 metal profiles were embedded in these strips in order to execute a technological system for building the superstructure, their upper fitting elevation being up to +2.00 m ... 4.00 m above the surface of the existing land.

The S1 poles are rectangular in shape, a 30x30 cm cross section and reinforcement cages on the inside.

In the area where the M, N, 2 axes intersect one another there are the strip guiding girders, with an inner cross section of 0.20 x 5.50-3.50 m.

The role of S1 profiles is to allow the top - down construction of the building. The S1 poles are not final; they have a strengthening purpose strictly during the execution phase of two superstructure levels, concurrently with the execution of the infrastructure.

#### 5. CONCLUSIONS

Following the visual analysis conducted on the construction site, it was ascertained that the works presented in ch. 4 had been carried out. The completed works may be preserved in their current state provided that the following measures are taken:

- In order to avoid the risk of personal injury, it is necessary to repair and secure the existing fencing along the site perimeter;
- The provision of covers required to seal the metal poles.



- The execution of a coating for the metallic elements by means of priming and painting;
- Displaying posters with falling, injury, etc. warnings.

It is also recommended that, before carrying on with the works, a detailed valuation report be drawn up, with accurately determined foundation depths for all the executed elements, their concrete grade, deterioration rate, etc.

CLUJ-NAPOCA  
08.10.2017

TECHNICAL EXPERT  
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ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 1**



**PHOTO 2**



ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 3**



**PHOTO 4**

ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 5**



**PHOTO 6**



ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 7**



**PHOTO 8**



ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 9**



**PHOTO 10**



ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 11**



**PHOTO 12**

ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 13**



**PHOTO 14**



ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 15**



**PHOTO 16**

ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 17**



**PHOTO 18**



ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 19**



**PHOTO 20**



ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 21**



**PHOTO 22**



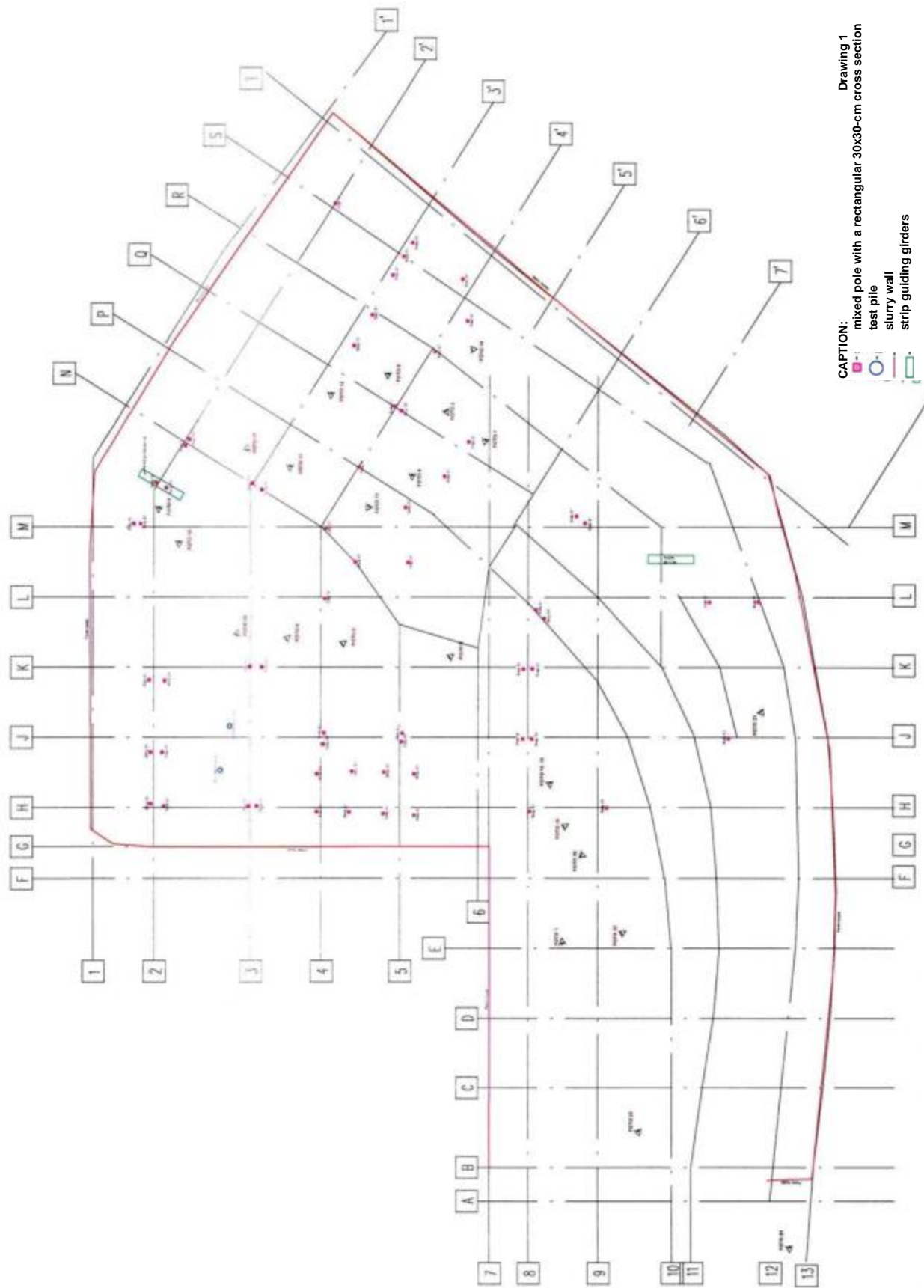
ANNEX – RELEVANT PHOTOGRAPHIC ASPECTS



**PHOTO 23**



**PHOTO 24**



**Drawing 1**  
**CAPTION:**  
 mixed pile with a rectangular 30x30-cm cross section  
 test pile  
 slurry wall  
 strip guiding girders