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Original Article

Aspects Regarding the Topo-Geodesic Works for Expansion of a Sewage System

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Abstract

Cadastre of edilitar networks is part of the urban cadastre fund dealing with the inventory and systematic evidence of edilitar networks, from the underground and from the surface, from the perimeter of a locality, in terms of technical and quality, as well as to maintenance and updating. The mandatory elements of urban networks cadastre are: track and inventory the network type of urban networks of water, sewerage, gas, heating, electricity, and telephone.

Keywords: cadastre, sewage, topography, urban network.

1. Introduction

There are various variants, technical solutions, design and material used for channels. Most pipelines in our country are of cement or asbestos-cement, and major collectors have different structures, some armed with metal, being true tunnels. But there are common principles and widely used variants.

These are converging gravitationally to the basement from where they pass to the outside through the connection of the public sewers.

Pluvial water channels have openings to the streets, courtyards and other spaces. They are lateral or horizontal gutters covered with grates. Inside the shaft mounted devices to prevent entry of garbage and possibly emanation of odors, thus channel bucket or the bucket and soda.

The structure of a sewerage network is arborescent: the racord canals converge into secondary collector canals which are reunited in main, ending or should terminate at the treatment plant.

2. Material and Method

Based on existing documents, was made the recognition of land, consisting on identification of geodetic points existing from previous works, elevation marks and other information in order to achieve the objective so as to respond as accurately to the details on field. In order to ensure a good homogeneity of the network before the actual measurements were studied several possible locations. On the plan 1:20 000 of municiple Aiud were located several possible locations. After identifying the objectives was passed to search any geodetic points in the area which were used in other works.

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There were also identified on field the points for which the coordinates are known. There were made provisional descriptions of the designed points and were drawn sketches. For an easier identification of existing or projected points, were photographed their places with a digital camera.

3. Results and Discusions

Ostaşilor Street is located in the southern part of Aiud having as western boundary DN1 (st. Tudor Vladimirescu) and the eastern limit st. Station (DJ107E).

Therefore the proposed objective will have the starting point on the right side Tudor Vladimirescu street, near the intersection with Valea Lupului street, then will descend on the same street until the intersection with. Ostaşilor street, where it will be undercrossing the National Road 1 (DN1) and will continue on the entire length of this street. Finally at the exit of the Ostaşilor street the connection will be made in the existing network on Gării street (Fig. 1).

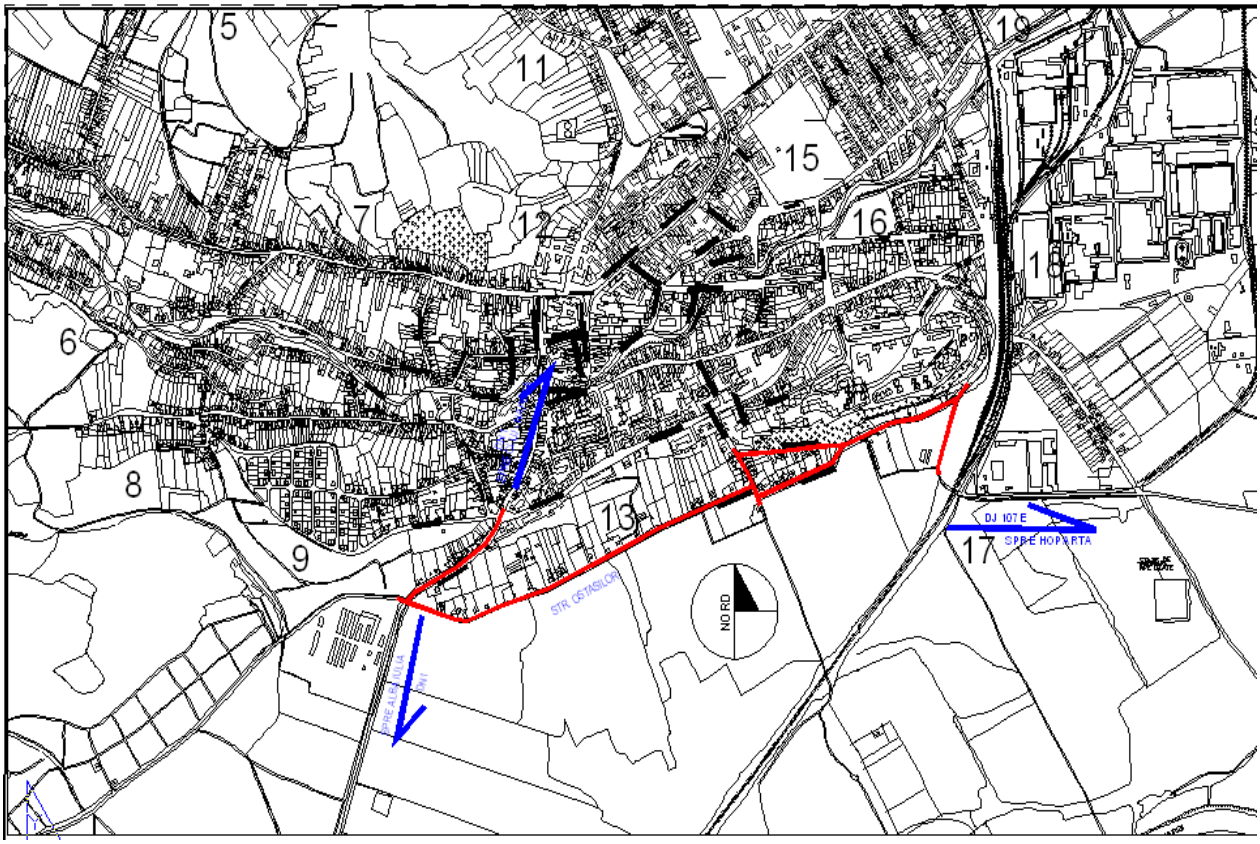

Figure 1. The localisation of the objective

A complete list of geodetic points used during the course of the measurements is presented in Table 1.

Topographical plans are drawn up effectively by poligonal routes combined with radieri. The points of the polygonal route constitutes the lifting network.

The design work mainly involves choosing the routes and the traverse points that make up a whole lifting network and it must allow full and correct representation of the land. Hence the main polygonal are developed near the details that want to be measured (Fig. 2 and Table 2).

Table 1. The coordinates of the geodetic points

Old Points			
Point	X	Y	Z
101	401178.903	534670.328	271.738
103	401294.623	535122.343	257.350
102	401299.565	534974.932	259.580
126	402433.238	535458.991	247.480
226	402697.566	535485.526	246.100

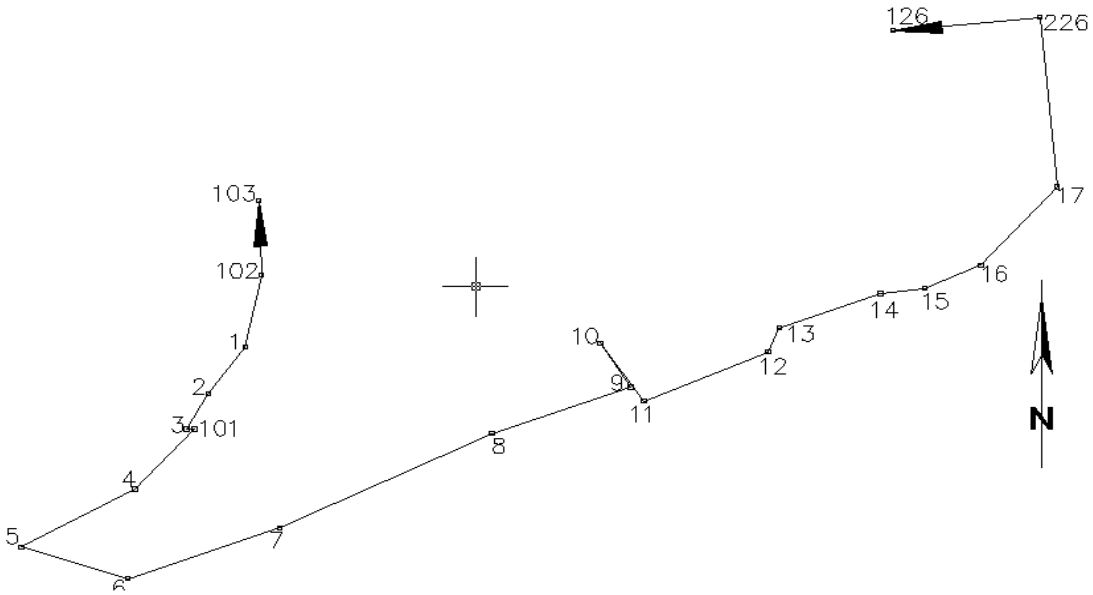

Figure 2. Visas sketch

Table 2. Coordinates of the new determined points

New Points			
Point	X	Y	Z
1	401270.412	534832.685	265.268
2	401204.083	534740.496	271.615
3	401164.721	534670.814	271.313
4	401072.938	534552.444	261.367
5	400868.576	534437.029	248.621
6	401059.645	534374.899	243.398
7	401332.649	534475.328	241.187
8	401713.251	534661.997	241.706
9	401962.234	534753.849	243.470
10	401908.057	534840.920	246.940
11	401986.481	534725.684	242.839
12	402209.826	534822.986	243.139
13	402229.070	534870.639	245.112
14	402411.110	534938.449	244.756
15	402490.085	534949.059	243.686
16	402591.498	534995.097	243.606
17	402728.183	535149.697	245.588

Having the program system TERRAMODEL FDM, the conception of collecting and processing of topo-geodetic data can change according to the facilities offered by it, moving to use methods and procedures of modern data acquisition and processing (Fig. 3).

The problem of determining the positioning points, reflected in the field work (data collection) and office work (data processing) is regarded as a single process, with one final goal: obtaining the coordinates of points, with the necessary precision required by the standards. Using all the factors that contribute to quality improvement of the results of field work and office is a need and also a possibility at present, having available programs TERRAMODEL FDM system.

In the case of relatively plane terrain, with low slopes, the profiles are made using the geometric leveling.

Simultaneously with the collection of elements for the longitudinal profile (Fig. 4) are also collected elements for the cross sections (Fig. 5).

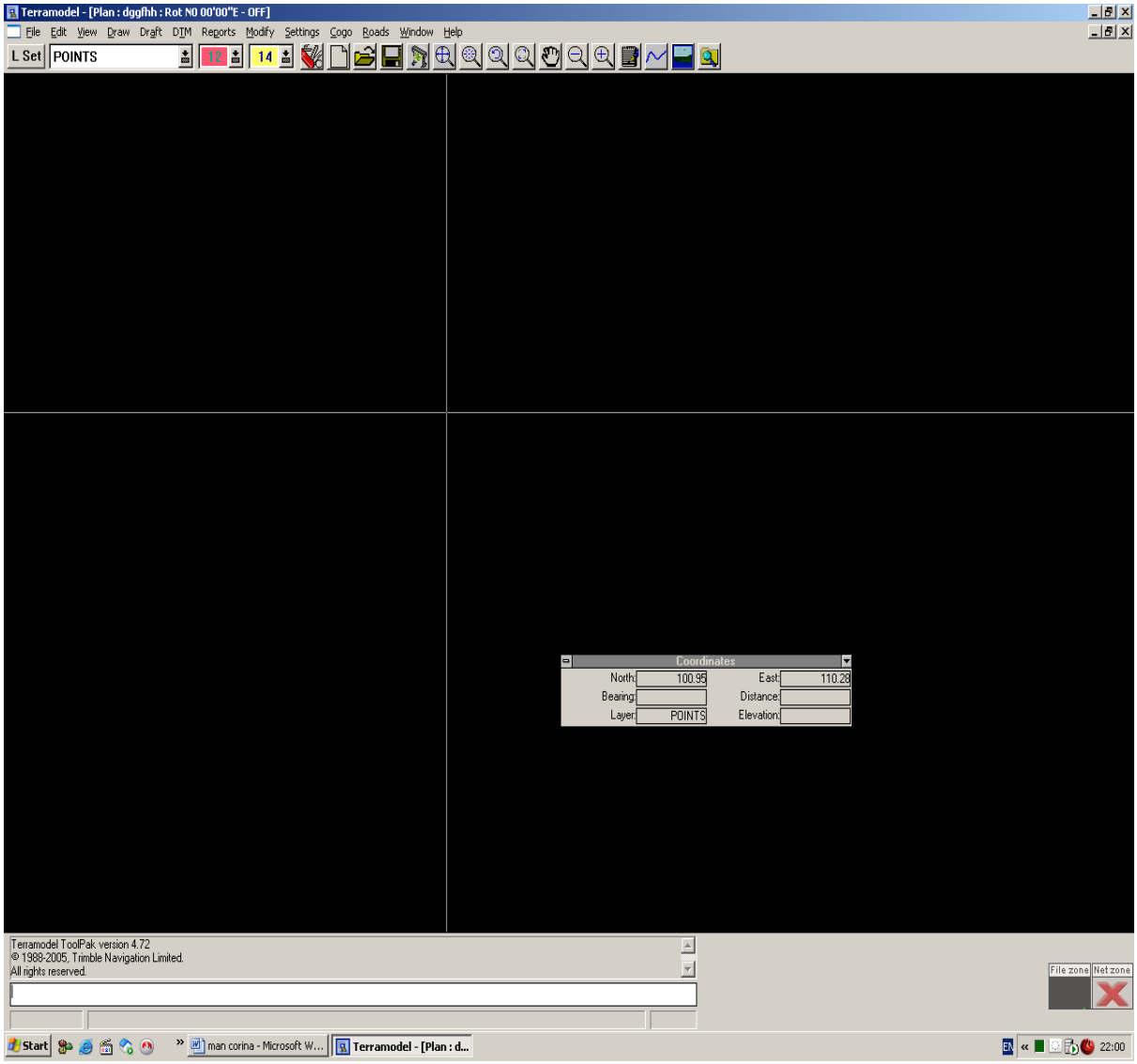

Figure 4. Terramodel

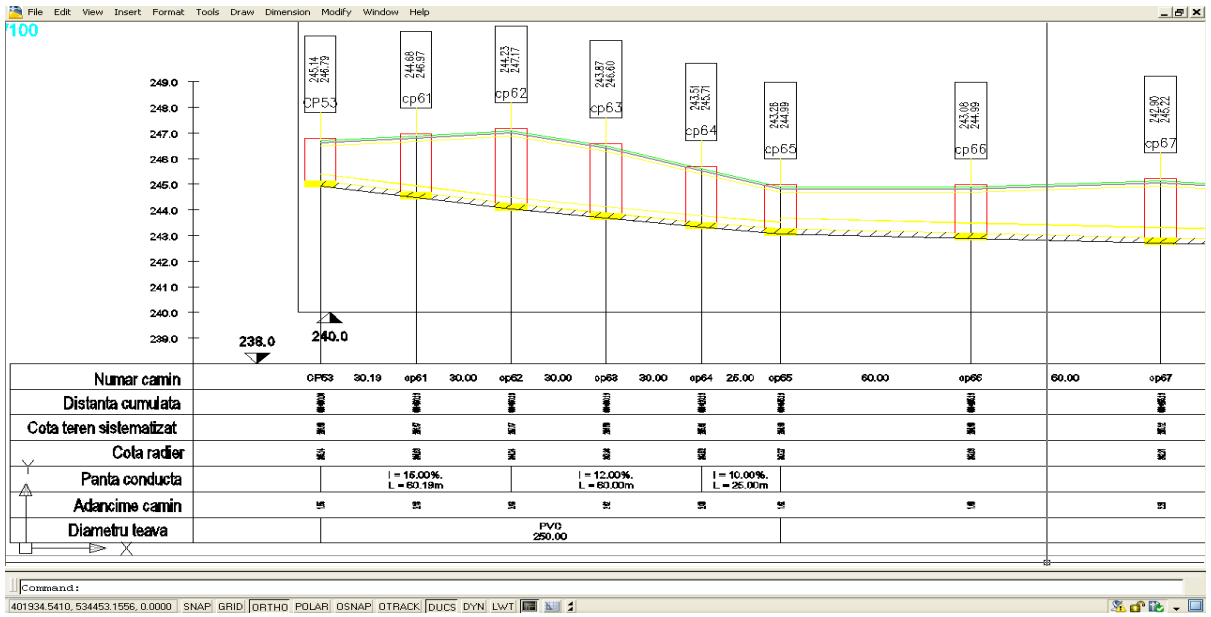

Figure 4. Longitudinal profile

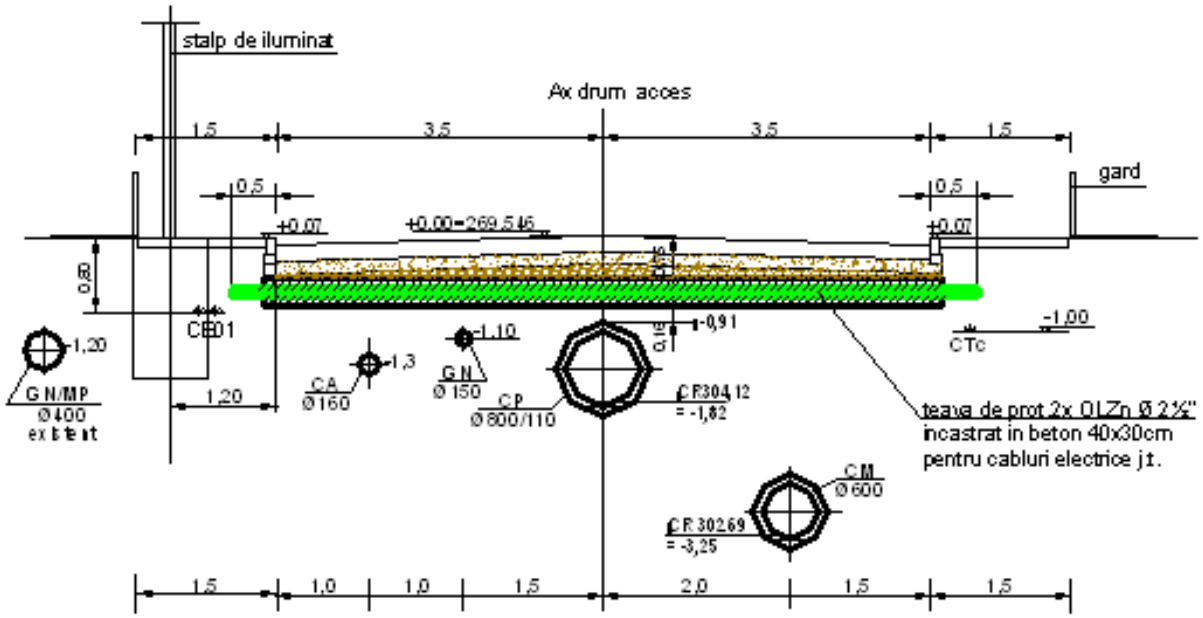

Figure 5. Cross section

4. Conclusions

The construction of the sewage system must ensure perfect tightness, a clear separation of mains water (which must not come into contact and in no case should not pass over it) to avoid any possible contamination. It must have a sufficient dropping, elbows not too tight, a corresponding depth in order to not appear the frost in winter and an appropriate sizing (diameter) to allow taking over the whole flow, so it won't appear blockages and repression on the outside on the streets or worse inside buildings.

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