**Technical description**

1. ***Exposition of the task***

My task was to plan water supply, sewage in a smaller area of a settlement for VKKT of BME. I was given the basic datas for the calculations.

The client wanted me to plan efficient systems that will require low repair, redesign cost in the future.

1. ***Exposition of the planning area***

There are small houses, industrial plants and a school in this part of the settlement. The map of this area is quite simple so I could plan quite simple systems. The ground is increasing from southwest towards northeast. The lowest point in this area is around point 1. I had the connection points which had to be reached by all the systems.

1. ***Exposition of the basic data***

The basic data are based on average consumptions given by the supplier.

1. ***Technical regulations***

In the water supply system there is only one requirement that the pressure must be a tleast 25m above the ground. The loss-coefficient must be less than 10%0 in each branch.

In case of the sewage and storm water systems the velocity must be at least 0,4 m/s to let the pipe clean itself. The water depth in the pipe must be between 20% and 80% of the diameter and the pipe should be between 2-6 meters below the ground

1. ***Determining the loads***

In case of the water supply system the first thing was to determine the amount of water flowing in each branch for three states (min, max, average). After these I used iteration to get the exact flows in the branches.

In case of the sewage system I got the consumption data and from these I could determine how much of the used water will go in to the sewage system. Then I used prandtl-kármán-colebrook formula to determine the diameters.

In case of the storm water system I had data about the rains’ frequency and the average runoff coefficient in the area. From these I was able to determine the amount of water leaving the area at the outlet point in case of a rain event. After that I had to use prandtl-kármán-colebrook formula to determine the diameters.

1. ***Exposition of alternatives of the lay of pipelines***

The pipes in the water supply system should reach most of the houses the industrial plant and the school. These were the rules I was following.

The pipes in the sewage and the storm water system should follow the slope of the ground.

1. ***Exposure of the pipes designing***

In the water supply system, according to max loads the used diameters will be:

|  |  |
| --- | --- |
| 1-2 | 200 mm |
| 2-3 | 175 mm |
| 3-4 | 175 mm |
| 4-5 | 150 mm |
| 5-6 | 100 mm |
| 6-7 | 100 mm |
| 7-8 | 125 mm |
| 8-9 | 125 mm |
| 9-2 | 125 mm |

In the sewage system the used diameters will be the following:

The main branch diameters:

From the outlet point until point number 2: 300 mm

From point number 2 until the end of the branch: 200 mm

All the sub-branches: 200 mm

Attachments:

* Calculations: ……
* Maps: …….
* Profiles: …….