INSTRUCTIONS FOR SOIL SAMPLING

Sample taking - general

For stabilization testing, the samples should be as representative as possible. Samples (i.e. sample size over 10 liters) are advised to take with excavator. Smaller samples can be taken with window sampling device or similar equipment.

Following instructions are made to advise the soil sample taking and instructions should be understand as informative. In sample taking the use of common sense is encouraged.

In the following soil sampling instructions are divided into two groups in where larger sample locations are identified and instructed. Furthermore instructions for smaller sample taking are also advised.

Larger samples - sample locations and sampling

Sample locations are based on geotechnical report made by IPT, entitled as "Tallinn-Taru Maantee Anna Ümbersõit".

According to above mentioned report there are several potential locations in where stabilization of soft soils is possible. In the following four (4) major sampling sites are identified with soil sampling instructions.

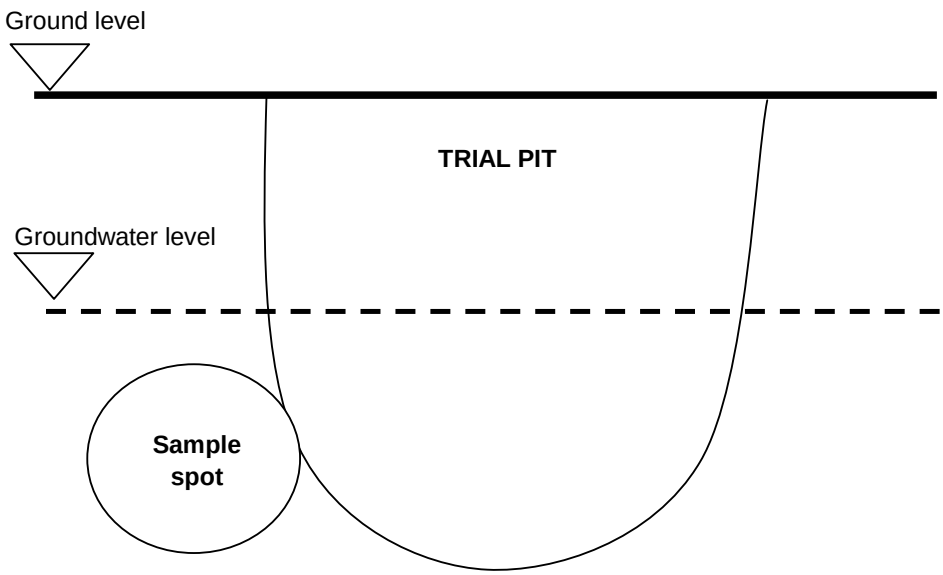
Sample 1 (PA 4)

According to geotechnical report prepared by IPT there is one peat soil location in where peat layer is approximately down to 4 meters, see geotechnical report borehole PA 4.

Sample size in this particular location should be approximately 50 l in each examined layer of soil to be tested. Therefore samples from PA 4 should be taken as follows:

- 0,5…1 meter → 50 l of test soil
- 1…2 meter → 50 l of test soil
- 2..3 meter → 50 l of test soil
- 3…4 meter → 50 l of test soil
- 4,5 … 5 meter → 10 l of test soil

NOTE! Samples should be as representative as possible. This is very important and essential in order to achieve useful testing data of the whole study. Samples are advised to take by excavator, please make sure that samples are taken to correspond exactly each layers (in depth) and packed air tight buckets which are durable enough in transportation etc. From the IPT report it is notable, that groundwater level might cause some difficulties in the sample taking. Usually when using excavator in the sample taking, the trial pit will be full with water. In that case the principal of sample taking must be taken extra care of, see idea in the following figure.



The idea of sample taking is not to take the sample from bottom of the trial pit, because then the sample usually contains extra water and therefore the sample is not representative. Avoiding of surplus water in soil sampling it is advisable that particular soil samples are taken alongside of the trial pit, see below figure.

In sample taking, use clear identification coding.

Sample 2 (PA 1)

Sample 2 are advised to take from PA1 presented in report prepared by IPT. Again sample size in this particular location should be approximately 50 l in each examined layer of soil to be tested. Therefore samples from PA 1 should be taken as follows:

- 0,5…1 meter → 50 l of test soil
- 1…1,5 meter → 50 l of test soil
- 2..3 meter → 30 l of test soil
- 3,5…4 meter → 30 l of test soil

Samples should be as representative as possible. Samples taken by excavator, please make sure that samples are taken to correspond exactly each layers (in depth) and packed air tight buckets which are durable enough in transportation etc.

Use clear identification coding in the sampling.

Sample 3 (PA 3)

Sample 3 are advised to take from PA3 presented in report prepared by IPT. Again sample size in this particular location should be approximately 50 l in each examined layer of soil to be tested. Therefore samples from PA 3 should be taken as follows:

- 0,5…1 meter → 50 l of test soil
- 1…2 meter → 50 l of test soil

- 2..3 meter → 50 l of test soil
- 3,5…4 meter → 30 l of test soil

Samples should be as representative as possible. Samples taken by excavator, please make sure that samples are taken to correspond exactly each layers (in depth) and packed air tight buckets which are durable enough in transportation etc.

Use clear identification coding in the sampling.

Sample 4 (PA 5)

Sample 4 are advised to take from PA5 presented in report prepared by IPT. Again sample size in this particular location should be approximately 50 l in each examined layer of soil to be tested. Therefore samples from PA 5 should be taken as follows:

- 0…0,5meter → 50 l of test soil
- 1…1,5 meter → 50 l of test soil
- 2..3 meter → 30 l of test soil
- 3…4 meter → 30 l of test soil

Samples should be as representative as possible. Samples taken by excavator, please make sure that samples are taken to correspond exactly each layers (in depth) and packed air tight buckets which are durable enough in transportation etc.

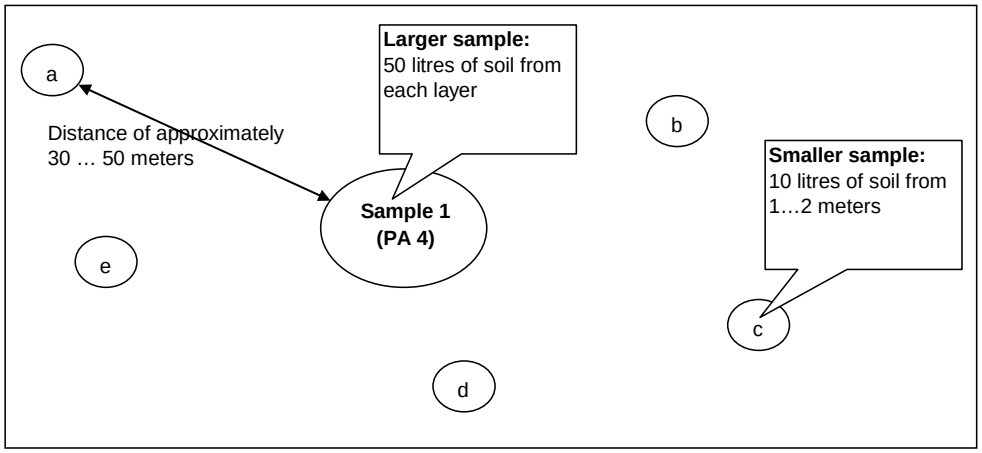
Use clear identification coding in the sampling.

Smaller samples - sample locations and sampling

Smaller samples are also advised to be taken by excavator. Sample size should be approximately 10 liters/sample.

Smaller samples in association with larger samples

Above larger sample sites were identified based on geotechnical survey report prepared by IPT. It is advisable to take smaller "check out samples" from these particular locations as depicted in the following figure.



The idea of smaller samples is hereby to study the area conditions in where the larger samples are taken in more comprehensive stabilization studies in geotechnical laboratory.

It is advisable to take 5 smaller samples from depth 1 … 2 meter in every associated larger sample locations. Therefore, the number of smaller samples is 4 x 5 = 20 samples.

Use clear identification coding in the sampling.

Smaller samples, continued

According to geotechnical survey report prepared of IPT the following sites are advised with smaller samples:

- PA 2, four smaller samples from separate locations (10 liters each from depth 1 … 2 meters)
- PA 6, four smaller samples from separate locations (10 liters each from depth 1 … 2 meters)
- PA 7, four smaller samples from separate locations (10 liters each from depth 1 … 2 meters)

Use clear identification coding in the sampling.

Definition of soil stabilizers/ binders

In the mass stabilization, aim is to utilize as much as possible the local materials as binders, especially ash products. In the binder mixtures also the use of cement and possible other additive components and their potential in mass stabilization are studied and tested.

It is suggested that tested binders are:

- Ordinary Portland Cement
- Road Cement
- Fly ash from oil shale energy production
- Clinker dust

Please deliver sufficient amount of binder materials to our laboratory in the same delivery than soil samples (e.g. 1 sack each binder type).